VOLUME IV.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1919.

No. 17, Original.

THE STATE OF NORTH DAKOTA, COMPLAINANT,

vs.

THE STATE OF MINNESOTA.

IN EQUITY.

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VOLUME IV.

STATE OF NORTH DAKOTA

vs.

STATE OF MINNESOTA.

2841 HERMAN G. MILLER, being sworn in behalf of the complainant, testified as follows.

Examined by Mr. Pinkney:

Q. Where do you live?
A. Fox Lake, Wisconsin.
Q. How long have you lived there?
A. About 16 years.
Q. Do you own any land in the township of Fairmount, Richland County, North Dakota?
A. I do.
Q. Will you describe it?
A. Section 17-129-47.
Q. You own all of section 17?
A. The north half of section 17 township 129 Range 47.
Q. How long have you owned it?
A. I owned part of it for something like 13 or 14 years.
Q. What part?
A. The northwest quarter.
Q. When did you acquire the northeast quarter?
A. The northeast quarter 8 or 9 years ago.
Q. To what uses have you put this land since you acquired it?
A. Raising crops.
Q. Have you farmed it yourself?
A. No, sir, I have had tenants on it.
Q. Were these lands of yours covered by these flood waters of 1915, 1916 and 1917?
A. Yes, sir, they were.

2842 Q. How much of these lands were covered by those flood waters in the year 1915, about how many acres?
A. About 74 acres, in 1915.
Q. On what piece?
A. On the northeast quarter.
Q. How many acres were flooded in 1916?
A. The whole of the northeast quarter and part of the northwest quarter.

Q. How many acres on the northwest?

A. On the northwest something like 20 acres.

Q. In 1917, were those lands or any portion of them affected by these flood waters?

A. The same land as 1916 with the exception of 10 acres.

Q. And the same quantity in 1917 except about 10 acres?

A. 10 acres.

Q. You had 180 acres, you say, flooded in 1916 and in 1917 about 170?

A. Yes, sir less the railroad right, there is a railroad right goes out of that quarter, and there is a coulie, I figured that 20 acres, that is, 1916 was 20 acres less.

Q. That would be 160 acres?

A. Yes, 160 acres.

Q. Where did those 160 acres lie which were flooded in 1917?

A. That would be the whole of the northeast quarter and part of the northwest quarter.

Q. The whole of the northeast quarter would make 160 acres?

A. No, there it a railroad right out of that, and a coulie.

2843 Q. How many acres flooded in the northeast quarter in 1917.

A. 140 acres.

Q. In the northeast quarter?

A. Yes, sir.

Q. And where was the balance?

A. In the northwest quarter.

Q. How many acres.

A. 20 acres. There is 10 acres of corn that goes out of the 140.

Q. Then that is 130.

A. Yes, sir.

Q. Now in 1915 I understand you had 74 acres which were flooded on the northeast quarter?

A. Yes, sir.

Q. Were those lands in crop at the time the flood waters came upon them?

A. They were.

Q. What kind of crops did they have on them?

A. There was wheat and barley.

Q. How many acres of each?

A. There were 16 acres of wheat and 14 acres of barley that were flooded, and all of that whole quarter was in grain at that time.

Q. You got the crops on the balance of the quarter?

A. We got the crops on the balance of the quarter.

Q. Did you harvest that year, 1915, any wheat raised on the balance of your land there?

A. Yes, sir.

2844 Q. What was the average per acre of the wheat that you harvested on your lands there in 1915, that is, on the lands that were not flooded?

A. About 20 bushels to the acre.

Q. As I understand it, the flood came on this 60 acres of wheat about the time it was ready to cut, two weeks before?
A. Yes, sir.
Q. How did this 60 acres of wheat at the time it was flooded compare with the wheat on the lands that were harvested?
A. Just as good.
Q. Have you computed the loss you sustained on that 60 acres of wheat in the year 1915?
A. I have.
Q. Did you see these crops in the field?
A. I did.
Q. At what time?
A. At the time of harvesting there.

Mr. Palmer: That is objected to as not the proper measure of damages, and the witness not shown himself competent to testify.

Mr. Pinkney:

Q. Have you computed the value of those 60 acres of wheat as it stood in the field at the time just before the flood waters came upon it?
A. Yes, sir, I have.
Q. What was the net value of the crop of that 60 acres of wheat at that time?
A. $960.
Q. Have you computed it on the basis of 20 bushels to the acre.
A. Yes, sir.
2845 Q. In reaching this final figure of $960, have you deducted all items of expense that you would have been put to in order to harvest, thresh and market that 60 acres of wheat?
A. I have.
Q. Leaving the net value of the crop in the field at the time the flood waters came upon it of $960?
A. Yes, sir.
Q. About the 14 acres of barley that were harvested, barley that was produced on other lands in this tract, you were not there that year?
A. Yes, sir.
Q. What did stack barley produce per acre?
A. About 25 bushels to the acre?
Q. How was this 14 acres of barley, what was its promise as to a crop compared with the barley that was harvested?
A. Just as good.
Q. Have you computed the value of that 14 acres of barley?
A. I have.
Q. On the field at the time just previous to the time the flood waters came upon it?
A. Yes, sir.
Q. Its net value?
A. Yes, sir.

Q. What is it?
A. $192.50.

Mr. Palmer: We interpose the same objection, not the proper measure of damages, no foundation laid, and the witness has not shown himself competent to testify.

Mr. Pinkney:

Q. That is included in the——
2846 A. No, it is not included in the $960. That was wheat and this was barley.
Q. Is that the net value?
A. Yes, sir.
Q. In arriving at the figure $192.50, have you deducted the expense of harvesting and threshing and marketing, etc.?
A. Yes, sir.
Q. All other expenses that would have been necessary to have been incurred to put it on the market?
A. Yes, sir.
Q. Making a total value of the crops destroyed in the year 1915 of how much?
A. $1,152.50.
Q. In the year 1916 were those lands flooded?
A. Yes, sir.
Q. How much more were they flooded in 1916 than in 1915, if any?
A. All of it.
Q. The whole half section?
A. The whole half section, or whole quarter section.
Q. That is the northeast of 17?
A. Yes, sir.
Q. How much of the northwest quarter was flooded in 1916?
A. In 1916, after deducting the surrounding land, left about 165 acres.
Q. 165 acres flooded in the year 1916?
A. 1916, yes, sir.
Q. What crops, if any, did you produce on that land, that
2847 165 acres, in 1916?
A. Not any.
Q. Why not?
A. Because it was flooded, couldn't——
Q. Covered with water?
A. Yes, sir.
Q. Did you produce any crops that year on the remainder of your lands that were not flooded?
A. I did.
Q. What kind of crops did you produce that were grown on the other lands in the year 1916?
A. I had wheat.
Q. What did your wheat average per acre that year?
A. 6 bushels.

Q. 6 bushels to the acre?
A. Yes, sir.
Q. What other crops did you have? How many acres of wheat did you have on this land in 1916 that was not flooded, as nearly as you can remember?
A. 22 acres.
Q. You say that the average was 6 bushels to the acre?
A. Yes, sir.
Q. Can you tell what the rental value of that 165 acres of that flooded land was worth to you in the year 1916, based upon the crops usually raised by you on the land, their market value for your land?
A. Less all costs of producing a crop, $856.40.
Q. On the 165 acres?
A. Yes, sir.
Q. Is that value the net value after deducting all expenses of producing, harvesting and marketing the crop?
2848 A. Yes, sir.
Q. Did you produce any crops in that 165 acres in the year 1917?
A. No.
Q. Why not?
A. Because it was too wet.
Q. So wet you couldn't plow it?
A. Couldn't plow it, with the exception of 10 acres.
Q. Then it would be 155 acres you lost the use of in 1917 because of these flood waters?
A. Yes, sir.
Q. What was the net rental value to you of that 155 acres in the year 1917?

Mr. Palmer: That is objected to as not the proper measure of damages, witness not shown himself competent to testify no foundation laid.

A. $1,745.90.

Mr. Pinkney: In reaching those figures, you may state to the court whether or not you have deducted all the expenses necessary to incur in putting in, harvesting, threshing and marketing the crop that would have been produced on the land.
A. I did.
Q. Leaving a net loss?
A. $1,745.90.
Q. Do those figures you have given as to your loss due to those flood conditions in the year- 1915, 1916 and 1917 represent the total value of the crops as well as the total rental value of the number of acres flooded in each year respectively?
A. It does.

2849 Cross-examination.

By Mr. Palmer:

Q. What year did you buy the northwest quarter of section 17?
A. Somewhere around 13 years ago.
Q. What did you pay for it?
A. Well, it was figured at that time at $33.50 an acre.
Q. What do you mean by saying it was "figured" at that time?
A. I had another farm in Wisconsin that I traded in toward this. I had 80 acres I traded in toward this 160.
Q. Where was the 80 acres in Wisconsin?
A. In Polk County.
Q. How far from a market?
A. Four miles.
Q. How long had you owned it?
A. I owned it a year and a half.
Q. What did you pay for it?
A. I paid $25 an acre cash.
Q. Did it have any buildings on it?
A. It did.
Q. And it was four miles from a market, and had buildings on it, and you bought it for $25 an acre?
A. Yes, sir.
Q. What was the character of the buildings?
A. There was a fair house and a barn, granary, and a blacksmith shop. Just common, nothing very good.
Q. Was the land under cultivation?
A. 60 acres of it was under cultivation.
2850 Q. What was the balance in?
A. Timber.
Q. What kind of timber, second growth or first growth?
A. No, first growth timber.
Q. You kept it a year and a half?
A. A year and a half.
Q. At what price did you trade it in on this land?
A. $35 an acre.
Q. Of whom did you acquire this northwest quarter of 17?
A. John Stoppran.
Q. Where did he live?
A. He lived at Clear Lake, Wisconsin.
Q. How long had he owned the land?
A. That I don't know.
Q. Did you ask him how long he had owned it?
A. I don't know as I did.
Q. Did you ask him what he had paid for it?
A. I did not.
Q. Did you ask him whether it was overflowed land?
A. I did not.
Q. Did you look at the land when you bought it?
A. I certainly did.

Q. Did you make inquiry as to whether it was overflow land?
A. I made inquiry as to the valuation of the land.
Q. What did you find out?
A. That $33.50 an acre was a bargain.
Q. Did it have buildings on it?
A. No, sir, not much.
2851 Q. Did you improve the buildings?
A. I did.
Q That was the quarter that had the buildings on it?
A. Yes, sir.
Q. Such buildings as they were?
A. Yes, sir.
Q. Had this owner from whom you acquired it ever lived on it?
A. No, he did not, not to my knowledge.
Q. Do you know whom he got it from?
A. Mr. Alme.
Q. Where did he live?
A. Lived at Fairmount, known as Dad Alme.
Q. Did Dad ever live on this land?
A. He homesteaded it.
Q. Do you know what he got for it when he sold it?
A. I do not.
Q. Do you know how long he lived on it?
A. As I understood, something like 27 years.
Q. Did you say the buildings were very poor when you acquired it?
A. Yes, sir.
Q. All of them were poor?
A. All of them were poor.
Q. And small?
A. And small.
Q. And unpainted?
A. Unpainted.
Q. Was there any fence on the land?
A. Very little, practically none.
2852 Q. Any orchards?
A. A grove, that is all, no orchards.
Q. No small fruit, or anything of that kind?
A. No, sir.
Q. I take it you had never seen the land prior to the time you acquired it?
A. I come to see the land before I made the deal.
Q. Yes, but before you had not known it?
A. I knew nothing about it until he proposed the deal to me.
Q. What did you do with the land after you acquired it?
A. I rented it to a renter?
Q. How long did this renter live on it?
A. I guess he lived on it three years.
Q. At what rent did you rent it to him?
A. 50% of the crop.
Q. And you furnished the seed?

A. I furnished the seed, paid half the thresh bill and half of the time.

Q. Did you make any attempt to rent it for cash rent?

A. Never.

Q. What returns did you get from your half during that three years?

A. That is too far back, I don't remember.

Q. Did you get as much as $5 an acre for the quarter section?

A. It rented from $550 to $800.

Q. Your net returns?

A. Net returns.

2853 Q. After deducting the cost of the seed?

A. It was my share, yes, sir.

Q. That was your share, you *you* furnished the seed?

A. Yes, sir, I did.

Q. You paid the taxes?

A. Yes, sir.

Q. And you kept up the improvements?

A. Yes, sir.

Q. And the insurance on the buildings?

A. Yes, sir.

Q. So that you wouldn't undertake to say that your net returns were $500 to $800 on that quarter?

A. Yes, sir.

Q. You say you acquired the northeast quarter some 8 or 9 years ago?

A. Yes, sir.

Q. Whom did you get that from?

A. There is two brothers named Ring, I think their name was.

Q. Where did they live?

A. Badger, Iowa.

Q. Had they ever lived upon this land?

A. Not that I know of.

Q. How long had they owned the land?

A. I don't know that?

Q. Did you inquire of them as to how long they had owned it?

A. I never see these people?

Q. What did you pay for this land ?

A. $33 an acre.

2854 Q. For the northeast quarter?

A. Yes, sir.

Q. Did that have any buildings upon it?

A. Yes, sir, just a granary?

Q. Small or large granary?

A. I think it is about 18 by 24.

Q. Is that all the buildings that were ever upon it?

A. That is all I ever knew.

Q. Did the land have any fences upon it?

A. Not any.

Q. Any groves?

A. Not any.

Q. Any orchards?
A. Not any.
Q. Small fruit, or anything of that kind.
A. Nothing.
Q. Had it ever been cultivated?
A. Yes, sir.
Q. When you got it?
A. It was not cultivated at that time, no.
Q. Had it ever been cultivated up to the time you got it 8 or 9 years ago?
A. Yes, sir.
Q. How long before?
A. I couldn't say.
Q. Well, you mean to say that it bore evidence of having been cultivated at one time?
A. Mr. T. P. Williams told me he had it all in barley before I bought it.
Q. How long before you bought it?
2855 A. That I don't know.
Q. How many years did he have it in barley?
A. That I don't know.
Q. According to your best judgment, how long since any part of it had been cultivated at the time you got it?
A. I don't know. As I understand, these two brothers were at outs, they wouldn't rent it to anybody. What one brother wanted to do the other wouldn't consent to do, and they was fighting when I tried to buy it. When one brother wanted to sell, the other one didn't, and finally, I got a banker to buy it for me at Badger, Iowa.
Q. That is what you heard about it?
A. That is what information I got.
Q. Whether the brothers were fighting the land or fighting each other you don't know?
A. They were fighting each other, that is what I was informed.
Q. The land had gone back from cultivation?
A. Yes, sir.
Q. And grown up to weeds?
A. Yes, sir.
Q. And apparently had been so for a number of years before you got it?
A. Yes, sir, probably.
Q. How many years would you think?
A. I guess there was four years I saw the land——
Q. During the four years you saw the land after you bought the northwest quarter it wasn't cultivated, was it?
A. Something like that, might have been only three years.
2856 Q. It was not cultivated during that time?
A. It was not cultivated.
Q. Or any part of it?
A. No, sir, nor any part of it.
Q. And at the time you bought it did you make and inquiry as to whether it was overflow land?

A. No, sir, I never saw it overflowed.
Q. You only saw it three years?
A. It was always nice and dry since I saw it.
Q. That would refer to the years 1910, 1911, 1908 and 1909, would it?
A. It would be about 1905 and 1906.
Q. Did you look up the land carefully in the years 1906 and 1907?
A. I used to walk over it when I would come out in the field, and I used to walk over it, and I would see it.
Q. Was it wet in the fall?
A. I never see it wet.
Q. Q. This land lay within three-quarters of a mile of Blackmer station.
A. Yes, sir.
Q. And it lay within four miles of the town of Fairmount?
A. Yes, sir.
Q. And it had no improvements upon it, had been allowed to go back from cultivation and grow up to weeds?
A. Yes, sir.
Q. And lay right on a main road?
A. Yes, sir.
Q. And you got it for $33 an acre.
A. Yes, sir.
2857 Q. And you say that you think the fair returns from that land, the fair rental returns from that land, in the year 1917, were about $12 an acre?
A. Yes, sir.
Q. You think that is fair and correct?
A. I was offered, practically offered $17 an acre for it in 1914?
Q. I am speaking about the rental returns from it?
A. Yes, sir.
Q. You think that they would run around $12 an acre?
A. Yes, sir, compared with the rest of my land.
Q. After you got the land, did you put any buildings on it?
A. No, sir, I took the buildings off.
Q. When did you begin to have it cultivated? This northeast quarter?
A. About 1912.
Q. Then you had it some 2 or 3 years before any part of it was broken up?
A. No, that was broke at the time I bought it.
Q. What is the first year you had returns from cultivated land on it?
A. I couldn't say.
Q. What year did you get it?
A. Something like 9 years ago.
Q. That would be 1908?
A. Something like 1908.
Q. What did you do with it after you got it?
A. I rented it.

Q. To whom?
2858 A. Raymond Clarey.
Q. Is that one of Mrs. Clarey's boys, the lady who lives south?
A. Yes, sir.
Q. What terms did you rent it to him on, the first year?
A. 50% of the crop.
Q. And you furnished the seed?
A. I furnished the seed.
Q. Did he crop it that year?
A. He did.
Q. How many acres?
A. All of it, I guess.
Q. All of it plowed up?
A. Yes, sir.
Q. What did he crop it to?
A. To wheat, flax—to flax, mostly flax, I think it was.
Q. And the subsequent year did you rent it to him?
A. No, sir, I rented it to Charlie Solomon.
Q. Where did he live?
A. He rented the whole half section.
Q. Did he live on it?
A. Yes, sir.
Q. On what terms did you rent him the southeast quarter?
A. 50% of the crop.
Q. Did you have it all broken up?
A. Yes, sir, all of it.
Q. The coulee and all?
A. No, I didn't figure the coulee in my claim at all. I
2859 figured that out, 7 acres, but he took hay out of that, he used it all for hay.
Q. That is a coulee that comes up along the west side of the Bois de Sioux and forms the western outlet of Traverse Lake, doesn't it?
A. It starts on the southwest corner and runs in a northeast direction; about 22 acres of the northeast quarter on the south side of this coulee has never been plowed. That coulee we always use for hay land.
Q. On the south line of section 17 there appears to be two parts to that coulee or ravine, one bridged by a 32 foot bridge and one bridged by a 10 foot bridge; you have seen those bridges there?
A. One was a railroad bridge.
Q. No, I am speaking about the wagon bridge on the north line.
A. I know of only one bridge.
Q. You know one then?
A. Yes, sir.
Q. Do you know that one westerly of that, 40 rods?
A. I don't know that.
Q. I take it that those bridges are there for the purposes of accommodating the flow of the water from the southwest running to the northeast?
A. It is a drained territory, to drain the territory, stop it from banking it up when they put up the grade of the road.

Q. Do you know where the ravine or coulee begins on the southwest?

A. Well, I don't know just so, I can explain it.

2860 Q. It is one of the outlets of Traverse Lake, isn't it, too, across that flat?

A. It is a drain into the river.

Q. From Lake Traverse?

A. From my land into the river.

Q. From your land doesn't it go from there to the south, out of your land, doesn't it go way on the southwest south clear to Traverse Lake?

A. It don't go that way, it goes the other way. It travels in a northeasterly direction, it drains from the southwest to the northeast.

Q. Now, how far to the southwest? Dosen't it go clear to Traverse Lake?

A. Not that I know of.

Q. Did you ever ask?

A. No, sir.

Q. Did you ever follow it to see?

A. No, sir.

Q. When you bought this land, did you know that it had across it one of the outlets of Traverse Lake?

A. Never knew it.

Q. And that it was subject to overflow from the waters from Traverse Lake?

A. No, sir.

Q. Did you ever follow any further down than the southern line of 17 to see where the water was coming from?

A. No, sir.

Q. There appears to be af the south line of your northeast quarter of 17 a railway bridge?

A. Yes, sir.

2861 Q. What span is that?

A. Probably 30 or 40 feet.

Q. How deep a space underneath?

A. I should judge about 4 feet, that is along the bottom of the bridge, not along the rail, from the rail about 6 feet.

Q. That is put there for the purpose of spanning this ravine and allow- the passage of the water through to the northeast into the Bois de Sioux river?

A. Yes, sir, sure.

Q. And likewise on the east line of your northeast quarter of 17 there is a bridge across the highway?

A. Yes, sir.

Q. What span is that?

A. I presume it is about like the railroad bridge, maybe not as large, I don't think it is as large.

Q. You think it is somewhat smaller?

A. I think it is.

Q. And about the same space beneath.
A. No, I think it is deeper.
Q. That is, put there to span that ravine and to allow the passage of——
A. Drainage of the land.
Q. —the passage of the water to the northeast into the Bois de Sioux river?
A. Sure.
Q. In 1916 do you know anything about the rainfall in this locality?
A. I do not.
Q. Do you know anything about what it was in 1915?
A. I don't.
2862 Q. All you know is that the water came up that ravine from the southwest and spread out on your land?
A. Yes, sir.
Q. Now at the time you bought the land, you made no inquiry as to whether that land was subject to overflow by those waters from the south and west did you?
A. No, sir.
Q. You took your chances on that?
A. It looked good to me.
Q. Does that ravine look good to you?
A. Yes, sir, I thought it was an ideal thing, a natural drain of the water.
Q. And you took it for granted that it was caused by the flow, the continual flow of the water to the northeast there, did you not?
A. I never gave that a thought, but I did think it was a good thing to have.
Q. It was a natural watercourse?
A. Natural drain.
Q. Nothing artificial about it?
A. No, sir, nothing artificial, it was a natural water drain.
Q. In 1916, what time of the year were you there?
A. In the fall, harvest time.
Q. In 1916?
A. Yes, sir.
Q. Had you been there before that summer?
A. Not in 1916.
Q. When you got there in 1916, how much of the northeast quarter of 17 was under water, actually overflowed?
2863 A. Practically all of it.
Q. How deep was the water?
A. Well, it was muddy, so they couldn't plow.
Q. You mean the land was wet?
A. It was muddy so that you couldn't get in there, we tried to walk in it, but we couldn't walk.
Q. It wasn't a lake surface, was it?
A. It might just as well have been. There wasn't a natural lake over the top of the land.

Q. Was there any water actually standing upon the land in the fall of 1916 outside of this coulee.
A. Yes, sir.
Q. How many acres of actual water?
A. I couldn't say.
Q. Where was the water, along next to the coulee?
A. It was spread out some places, the lowest part of the land.
Q. There were other lands down there that had water standing on them?
A. I presume so.
Q. Both to the east and west?
A. Not to the west.
Q. Wasn't it a very wet season, wasn't that your understanding, that it was a very wet season in 1916?
A. I guess it was wetter than it was this year.
Q. Wasn't it wetter than it ever was before in the history of the country?
A. I don't know that.
Q. You don't know the contrary either, do you?
A. No, sir, I do not, I wasn't here.

2864 Q. On the northwest of 17 when you visited it in the fall of 1917, was there any water actually standing upon the land?
A. Yes, sir.
Q. Where?
A. Along the railroad right on the east line.
Q. On the east line of the northwest quarter along next to the railroad right of way?
A. Yes, sir.
Q. Or next to the railroad grade the water was standing?
A. Yes, sir.
Q. That was water that had come from this coulee along the railroad grade?
A. Backed up.
Q. And there ought to be, Mr. Miller, another bridge along the railroad there near the east of your northwest quarter?

Mr. Pinkney: We object to that as incompetent, irrelevant and immaterial, calling for a conclusion of the witnes-.

Mr. Palmer:

Q. To let that water through?
A. I don't see where.
Q. If there had been a bridge there, the water would not have backed up, would it?
A. Certainly it would.
Q. And got on your land?
A. It backed up just the same, it wasn't the railroad grade that was holding it back.
Q. What was it?

A. It was high, and it backed up, the water got so high in the river it backed up and struck a level.

Q. You think the water backed up on your land clear from the river?

2865 A. Yes, sir, sure it was on a level, otherwise it would have drained out.

Q. There was no dam to the north?

A. The water was too high at the river.

Q. Wasn't running out as it ought to?

A. If it would be so deep in the river, it would drain right out.

Q. But you say that the main part of the water that stood on your land in the northwest quarter of 17 in 1916 was the water along there next to the railroad grade?

Mr. Pinkney: I object to that, he didn't state that.

A. What I mean to say is that the water on my land was practically a natural flow of the Bois de Sioux river, and if the river had been lower, I claim there would have been no water on my land. That is the substance of what my claim is.

Q. If there hadn't been any water on your land, there wouldn't have been any water?

A. If the river had not been so high, I wouldn't have had this water.

Q. Do you know where the water came from?

A. I am satisfied that if it was lower in the river than on my land, it would have drained off.

Q. It would have drained off to the northeast?

A. Yes, sir.

Q. The natural run of course of the water is to the northeastward?

A. Yes, sir, is to the northeast.

Q. Did you have a tenant on this land in 1915?

A. I did.

Q. Who was he?

A. Raymond Cleary.

2866 Q. Did he have the land on shares?

A. He did.

Q. Did you have it rented for 1916?

A. Yes, sir.

Q. To whom?

A. Raymond Cleary.

Q. On shares?

A. Yes, sir.

Q. Did you have it rented for 1917?

A. Yes, sir.

Q. To the same party?

A. Yes, sir.

Q. To whom?

A. To Eugene Prall.

Q. Where did he live?

A. On the place.

Q. When did he move there?
A. About a year ago.
Q. Fall of 1916?
A. Fall of 1916.
Q. In the fall of 1916 he moved onto this farm?
A. Yes, sir.
Q. Rented it from you?
A. Yes, sir.
Q. On what terms?
A. 50% of the crop.
Q. Just the same as you had rented, as you usually rented it?
A. Usually rented it.
2867 Q. And he had it through the season of 1917 on these terms?
A. Yes, sir.
Q. And cropped such parts of it as were not wet?
A. Yes, sir.
Q. Do you mean to say he didn't have any crop at all on this northeast quarter of Section 17 in this past year, this dry summer?
A. Had 10 acres.
Q. Have you any, do you know any reason why he didn't put in more?
A. Because it was so wet he couldn't get in to plow.
Q. Did you see it in the spring of 1917?
A. I did not.
Q. What was the first time you saw it in 1917?
A. I think it was some time in July.
Q. Wasn't it dry then?
A. Yes, sir.
Q. Just as dry as it ever was?
A. No, there was spots that was damp then.
Q. In this coulee?
A. No, the coulee——
Q. The northwest quarter, you say he lost some crop on that?
A. You said in the coulee, there might have been one in the coulee, I don't know.
Q. The northwest quarter, this past season of 1917 did he have a crop on that?
A. Yes, sir.
Q. All of it?
A. Practically all of it, not quite.
2868 Q. And as good a crop as on the surrounding land?
A. On the northwest quarter?
Q. Yes, sir, on the west quarter.
A. Yes, sir.
Q. And you say you got how many bushels to the acre?
A. In 1917?
Q. Yes, sir, of wheat.
A. 9 bushels to the acre.
Q. That was a good average crop?
A. It wasn't a good average crop.

Q. For this year I mean?
A. Yes, sir.
Q. Did he cultivate in 1917 the lands which had water on them in 1916 on the northwest quarter, this 20 acres?
A. Yes, sir.
Q. And did he raise as good a crop on that as he did on the balance of the land?
A. No, he did not.
Q. How much poorer crop did he have on that particular 20 acres?
A. He couldn't get in early in the spring because it was wet, and he got it in late.
Q. What crops did he put in?
A. Put in some barley.
Q. Did he have good barley?
A. Barley was pretty fair.
Q. How much did he grow per acre?
A. 10 bushels to the acre.
Q. You got this land on the market at the present time?
A. No, sir.
Q. You intend to keep it and cultivate it?
2869 A. Sure.
Q. There is no reason why if we have ordinary seasons it could not be a good farm?
A. If it don't back up the way it did before.
Q. You put in a claim here for certain amount of damages, and I observe that for 1917 you have about $12 an acre, nearly $12 an acre. Do you know of land being rented in that locality for cash rent?
A. I never inquired about that.
Q. It has been testified here that the cash rental value of land in that locality is $3 an acre to $4 per acre for cultivated land.
A. That is for corn land, isn't it? That is a differnece. Corn land, we do those things for a—we claim that a corn crop improves the land as well as it rests the land, and makes a better crop the following year, and I know in many cases when I first used to rent, I used to donate 20 acres of land to improve the land, clean it up.
Q. Do you know what corn land rents at?
A. Yes, sir.
Q. Cash rent in this locality?
A. Yes, sir.
Q. How much?
A. From $2.50 to $4 an acre, that is what I have heard them tell.
Q. $4 an acre for corn land?
A. I heard them tell they got $4 an acre.
Q. Whom did your hear state that?
A. I heard them tell they got it on the McConn land a half a mile north of my land.
Q. If a man rented a farm for $3 an acre or $4 an acre
2870 there is no reason why you shouldn't put it into corn or wheat or anything you please?
A. Yes, sir.

Q. I am asking you, Mr. Miller, for your information as to the fair cash value of farm land in this locality. Have you any information on that subject?

A. Only on the corn land, corn or pasture land, something to rest the land, but wheat land, I never heard them say what they got for wheat land, or oats or barley land.

Q. And all of these computations of damages you have made on the basis of so many bushels of wheat per acre that you would have got if you had farmed the land and got a crop and got it to market?

A. Compared with the rest of land, I did do that.

Q. In making the statement of your damages here, have you made such statement with the expectation of recovering those damages?

A. Certainly.

Q. From whom?

A. From the state of Minnesota, or whoever is responsible for this, which I understand is the State of Minnesota. They are the ones that are the owners of this ditch that caused this trouble and consequently they are the ones to pay it.

Q. And you understand that you are in practical effect a party to this action against the State of Minnesota?

A. I understand so.

Q. And you have contributed money toward the expense of instituting and maintaining this suit by the state of North Dakota against the State of Minnesota?

A. Yes, sir.

2871 Q. With the understanding that you are to have your damages from North Dakota if North Dakota recovers from Minnesota?

A. Yes, sir.

Q. Are you a citizen and resident of the State of Wisconsin, and have you been for a great many years?

A. Yes, sir.

Q. And you have never been a resident or citizen of the State of North Dakota?

A. Never have.

Redirect examination.

By Mr. Pinkney:

Q. I wish you would tell the Court what the character of this so-called coulee on your land is; is it a big open ditch with high banks?

A. It has fairly high banks.

Q. Or is it simply a swale in the contour of the soil?

A. No, I should judge that in the center of the coulee it would have a width of about—or we will say the coulee is 75 feet wide and the center of the coulee I think is 2 feet deeper than the edge.

Q. Then the high land?

A. Yes, sir.

Q. Has it a gradual slope?

A. There is a gradual slope to the river.

Q. And is there a gradual slope from the outside edges of the coulee in the center?

A. No, I think you start apparently from 75 feet to 150 feet, you are striking the level of the land again, the swale is inside of
2872 that.

Q. Is it of such a character you cut hay every year?

A. Cut hay right along through the coulee drove right through the coulee and cut the hay.

Q. And put up the hay?

A. Yes, sir.

Q. When you cut the hay, did you cut it with a mowing machine, horses attached?

A. Sure, with horses.

Q. Didn't have to cut it with a scythe?

A. No, sir, hard land in the coulee.

Q. This land you can work for the hay right along?

A. Mr. Cleary told me that he cut his hay and made his hay there right along.

Q. It is not land that is useless?

A. No, sir, but I never plowed it.

Q. It has been referred to as a place where the water continues to flow in this coulee at all times.

A. No, sir, it is a drain, it is a natural drain of the water.

Q. And does it contain flowing water all the time?

A. No, sir, it does not, it is dry practically most of the time.

Q. On this land of yours since you acquired it, you may tell the court whether or not you have produced on it every year since you acquired it up to 1915, crops of the various kinds you mentioned?

A. Yes, sir.

Q. And harvested them?

A. Yes, sir, for the two years that Charles Solomon had it, I got off the north half section, the east quarter was where I got
2873 off the most, I believe, I had it run 22 to 23 bushels of wheat to the acre, and the oats went about 45 bushels one year, and 58 bushels to the acre on the other year, on the east quarter.

Q. Northeast quarter?

A. Northeast quarter, yes, sir.

Q. Was that the year 1912, as you recall?

A. Just two years before the flooded year, that would be 1915 and 1914.

Q. Did these flood waters do any damage to your land?

A. Certainly.

Q. Have you estimated what would be the cost of restoring these lands to their former condition, that is, to the condition they were in prior to the time that the flood waters came upon them? Have you made any estimate as to what it would cost to restore those lands, any estimate per acre?

A. I never gave an estimate on it.

Q. It has been testified here that the cost of restoring this land

would be equal to $5 an acre for each and every acre that was flooded, covered by those flood waters in 1915, 1916 and 1917, restoring the tillability and arability of the land. In your opinion would or wouldn't that be a fair conservative estimate of the damage to the land occasioned by those flood waters?

A. I think it isn't any too much; I think that would be fair.

Q. What conditions did those flood waters leave your land covered with a growth of cat-tails?

A. Yes, sir.

(Complainant's Exhibit 39 in marked.)

Q. Look at the exhibit shown you marked Complainant's
2874 Exhibit No. 39, and state if that represents the general appearance of some of your land in the year 1916 and 1917?

A. Yes, sir.

Q. What are these high growths there shown in the picture?

A. Cat-tails.

Q. To what extent was your land covered with cat-tails in the years 1916 and 1917?

A. Practically all covered with cat-tails.

Mr. Pinkney: We offer Complainant's Exhibit 39 in connection with this testimony.

Mr. Bronson:

Q. You may state whether or not you expect the state of North Dakota to protect your property rights in connection with the damages you sustained by these flooded conditions?

A. Yes, sir.

Q. And such computations as you have made are made for the purpose of assisting the state of North Dakota in this litigation now pending?

A. Yes, sir.

Q. You have not talked to any official of the state of North Dakota?

A. No, sir.

Q. Except myself, now?

A. That is all.

Q. You never even talked to me before, have you?

A. No, sir.

Q. Never met me until this morning, have you?

A. No, sir.

2875 Recross-examination.

By Mr. Palmer:

Q. You never talked with any official of the state of North Dakota in relation to instituting and maintaining this action in part to recover your damages at any time, did you, Mr. Miller?

A. I did not.

Q. And you made this contribution to private parties for the purpose of employing private counsel to institute and maintain this action?

A. Yes, sir.

Q. And if you expected the state of North Dakota to protect you in your rights, why did you not talk or have some communication with the officials of the state, instead of private parties?

A. Because I thought that the private parties that was here could take care of my interests as well as I myself.

Q. And if you expected the state of North Dakota to protect you in your property rights on account of your having property here, why was it necessary for you to pay money for that purpose? Do you know anything about that?

A. I know it costs money to start anything.

Redirect examination.

By Mr. Bronson:

Q. You left this question of how your contributions were to be used to the private counsel that are appearing of record here in behalf of the complainant in this case, the State of North Dakota?

A. Correct.

2876 Q. And you don't know how it has been used, or what purpose it has been used, do you?

A. No, sir.

Q. You left that matter entirely to the solicitors appearing in this proceeding?

A. Yes, sir.

2877 JOHN E. BRUNS, being sworn in behalf of complainant, testified as follows.

Examined by Mr. Bronson:

Q. How old are you?

A. I am 39 years old.

Q. Are you the owner of the southwest quarter of section 33, Township 129, Range 47, Fairmount Township, Richland County, North Dakota?

A. Yes, sir.

Q. You may state whether or not you bought that land in the fall of 1913, paying therefor $55 per acre?

A. Yes, sir.

Q. Did you move on this land in the spring of 1914?

A. Yes, sir.

Q. At the time when you moved on it, you may state whether or not it was all broken except about 20 acres?

A. Yes, sir.

Q. And this 20 acres was in pasture land?

A. Yes, sir.

Q. You may state whether or not you farmed this land in that year, 1914?

A. Yes, sir.

Q. Put it into what crops in the year 1914?

A. Put it into wheat, oats and corn.

Q. Except the pasture land?

A. Except the pasture land.

Q. You may state whether or not you put this land in crop in the year 1915?

A. Yes, sir, I put this land in crop in the year 1915.

2878 Q. You may state whether or not the following are the crops that were sown in the year 1915: 30 acres of wheat, 40 acres of tame hay that was sown by you in the year 1914, 30 acres of corn, 20 acres of oats, about 12 acres of barley, about 20 acres of pasture; with the balance of the land consisting of house yard and road allowances.

A. Yes, sir.

Q. Did you gather and harvest this crop in the year 1915?

A. Yes, sir.

Q. Your lands were not flooded in the year 1915?

A. No, sir.

Q. In the fall of 1915 were the lands about you flooded?

A. Yes, sir.

Q. In the late summer?

A. Yes, sir.

Q. What difficulty, if any, did you have in getting access to this land of yours?

A. I had difficulty of getting provisions in, and getting in and off my farm by overflow water, for a length of time. I have a team, and then I had great difficulty in running a boat, because I am not much used to being a sailor.

Q. After those flood waters came on and reached their height, you used a boat for getting access to this land of yours, to and from White Rock, South Dakota?

A. Yes, sir.

Q. In the fall of 1916, how many acres were fall plowed on this land?

A. About 30 acres.

Q. In 1916 this land was put into crop by you?

A. Yes, sir.

2879 Q. What crops did you put in?

A. 1916?

Q. 1916.

A. Wheat, 30 acres of wheat.

Q. What shape was the ground in?

A. It was terribly wet.

Q. Why wet?

A. Wet on account of surrounding water, standing around it, seeping onto the land.

Q. That was all you were able to put into cereal grains?

A. That was all I was able to put in.

Q. You had your timothy land still, your pasture land?
A. Yes, sir.
Q. In the spring of 1916, the territory around you, that is, the lands around you, were they flooded?
A. Yes, sir.
Q. More than 1915?
A. Not any more than the fall of 1915. I don't think to any great extent, anyhow.
Q. Your land was not flooded in the sense that water was over it?
A. No, sir.
Q. How was your land affected by the flood conditions in 1916?
A. Well, the water seeping back to the ground and keeping the ground wet.
Q. The land, therefore, was wet?
A. Yes, sir.
Q. And did you lose the crops on the land that year?
2880 A. I cut about 4 acres of wheat out of the 30 acres I sowed.
Q. What did you do with it?
A. I fed it in a bundle to the chickens.
Q. Valueless practically?
A. Yes, sir.
Q. Except for that purpose?
A. Yes, sir.
Q. Are these conditions the reason why you couldn't put in the other ground that year?
A. Yes, sir.
Q. Did you cut your timothy hay?
A. I cut practically all but 10 acres of it.
Q. You lost about 10 acres that year on account of these wet conditions?
A. Yes, sir.
Q. How about the pasture land.
A. Pasture land, there was probably about 10 acres of that that I wasn't able to use.
Q. Some standing water on it?
A. Yes, sir.
Q. I will ask you to state whether or not you computed the crop loss for the year 1916 on account of those flood conditions?
A. Yes, sir.
Q. I will ask you to state whether or not that computation is as follows:

Mr. Palmer: I object to these questions as leading.

Mr. Bronson:

Q. 80 acres of oats at an average yield of 20 bushels per acre,
2881 market price 60¢, $960; 30 acres of wheat, average yield 7 bushels per acre, market price $1.35, $283.50; 10 acres of this timothy hay land that you mention, value $5, $50; pasture land, 10 acres that you mention you lost value $3, $30; total $1,325.50. De-

ductions: Feed, oats, $96; harvesting, threshing and marketing $275; total $372. Net $952.50.

Mr. Palmer: That is objected to as not a question, but a statement, as leading, suggestive, calling for a conclusion of the witness, and not testimony?

Mr. Bronson: Did you make such computation, Mr. Bruns?

A. Yes, sir.

Q. Are these computations as you figured your damages for the year 1916?

Mr. Palmer: We add the objection that it is not the proper measure of damages?

A. Yes, sir.

Mr. Bronson:

Q. You may state whether or not this was the value of the crops that you would have raised on these lands for the year 1916?

A. Yes, sir.

Q. Except for those flood conditions?

A. Yes, sir.

Q. Will you state whether or not the seed for 30 acres of wheat *wheat* was never seeded.

A. Yes, sir.

Q. I will ask you to state whether or not in making this computation you took into consideration the average yield of oats and wheat for that year, and the market price for each of the same?

A. Well, oats—wheat averaged about 7 bushels and oats
2882 about 20.

Q. You have figured your timothy hay at $5 value per acre?

A. Yes, sir.

Q. How did you figure that?

A. Well, I figured it up the actual hay itself is worth more than that.

Q. That would have been produced on those 10 acres you lost?

A. Yes, sir.

Q. And pasture land you figured at $3 an acre?

A. Yes, sir.

Q. How did you get at that?

A. It was impossible to graze it, to use it.

Q. That is, you figured the value of the use $3 per acre?

A. Yes, sir.

Q. Are you familiar with what they term the crop plan of renting?

A. Yes, sir, half plan is usual. Cash rent, some of it, and some of it on the half plan.

Q. That is [illegible] great crops, you are familiar with the crop plan?

A. No. [illegible]ey rent for half generally, or on a third.

Q. You are familiar with what is termed the cropper's contract plan, when it is used?

A. Yes, sir.

Q. Computing the rental value of these premises so affected by flood waters in the year 1916 as they would have been if not
2883 so affected by flood waters, I will ask you to state whether or not upon the rental basis the hay land would have had a value of $3 per acre?

A. Yes, sir.

Q. Or $30 for the 10 acres?

A. Yes, sir.

Q. And the pasture land likewise, $3 per acre or $30?

A. Yes, sir.

Q. And the rental basis for the oats would be half of the oats?

—. ——.

Q. Less the seed?

A. Yes, sir.

Q. Or $384?

A. Yes, sir.

Q. And the rental basis for the wheat would be one-half of the $283.50, with no deduction because you furnished the seed?

A. Yes, sir.

Q. Or $141.75, which as a matter of adding together, would make a total of $585.75, the rental value of these premises without these flood conditions in the year 1916?

A. Yes, sir.

Q. In 1916, did you sustain damage to a grove on these premises by reason of these flood conditions?

A. I certainly did.

Q. What was that damage, as to what trees were injured?

A. I lost, I should estimate, 30 nice box-elders, and about 20 or 30 nice elms.

Q. What is the damage in dollars and cents to such trees?

2884 Mr. Palmer: Objected to as not the proper measure of damages, the witness not shown himself competent to testify.

A. I don't think they could be replaced, the real actual damage to me, I judge $3 or $4 a tree.

Mr. Bronson:

Q. That is, you think they would cost $3 or $4 a tree to replace them?

A. Yes, sir.

Q. And the damage to that grove, therefore is $3 or $4 per tree?

A. Yes, sir.

Q. For fifty trees?

A. Yes, sir.

Q. Which would be from $150 to $200?

A. Yes, sir.

Q. In 1917 this land was put into crop?
A. Yes, sir.
Q. What sort of crop?
A. Put it into corn.
Q. All except the pasture land and the hay land?
A. Put it all into corn excepting that.
Q. In what condition was the ground by reason of these flood conditions?
A. The land was sour, and very soggy, not being able to tend to it the year before.
Q. That is in 1915 and 1916, flood conditions existed upon these lands?
A. Yes, sir.
Q. And in 1916 likewise, how did you get access to White Rock? Or to get from your land to any other land?
2885 A. During the early part of the spring I used a boat, and after the water went down some I made a trail with brush and straw to get out with a team, after we got it going down, of course.
Q. And your land by reason of these conditions that existed in the years 1915 and 1916 had become wet and soggy?
A. Yes, sir.
Q. You put it into corn in 1917?
A. Yes, sir.
Q. And how was this corn affected by this conditions of the soil resulting from the flood conditions?
A. The corn was slow maturing.
Q. How did it affect the corn, or the corn yield?
A. Well, I guess that I—on account of the conditions of the ground, I lost a yield of 5 bushels to the acre.
Q. In the year 1917?
A. Yes, sir.
Q. For how many acres?
A. For about 120 acres.
Q. Then do you state that the depreciation or the damage suffered in the value of the use of those 120 acres for the year 1917, on account of those flood conditions that existed as you have stated, to be the sum of $5 for the 120 acres, or $600?
A. Yes, sir.

Mr. Palmer: He said 5 bushels per acre.

Mr. Bronson:

Q. 5 bushels per acre. What do your figure the value of that corn?
A. Well, the value of such corn as matured is very hard for me to estimate. Good sound corn should be worth $1.20 to $1.30 a bushel.
Q. It would be at least worth, at the amount described
2886 a dollar a bushel?
A. Yes, sir.

Q. The damages on that basis would be at least $600?
A. Yes, sir.
Q. Which would be at least $5 per acre?
A. Yes, sir.
Q. Have you any improvements on these premises?
A. Yes, sir.
Q. State them.
A. I have got a barn, granary, outhouse, chicken-house, dwelling house, and a woodshed, besides a windmill and some fences.
Q. In fair, good, or poor condition?
A. Fair condition.
Q. Value would be about what?
A. Well, $3,000.

Cross-examination.

By Mr. Palmer:

Q. Were those improvements injured in any way?
A. Not by the water.
Q. Do I understand that the water did not actually come up onto your land in 1916?
A. Yes, sir.
Q. The flood, then, was confined to the waters adjacent to your land?
A. Yes, sir.
Q. Your land lays considerably higher than any of the other land around, doesn't it, Mr. Bruns?
2887 A. It practically lays higher, that is, you take the quarter in general.
Q. About three feet higher?
A. I can't tell.
Q. And it it enough higher so that when the other land was all covered with water, your- was not covered?
A. No, there was some land that is not all covered with water.
Q. Around you there?
A. Yes, sir.
Q. There was none of yours covered?
A. There was none of mine covered.
Q. And what other land was there that wasn't covered near you?
A. There was a quarter right in front of my house which lay in South Dakota.
Q. South of your quarter?
A. There probably was 80 or 90 acres of it that was not covered with water.
Q. Where was that 80 or 90 acres?
A. Right south of section 33.
Q. Right south of your place?
A. Yes, sir.
Q. Adjacent to your land?
A. Yes, sir

Q. Now the land on the east of it, was that flooded?
A. There was quite a bit of water on that.
Q. That is Mr. Erickson's land?
A. Yes, sir.
Q. Was that flooded in 1915?
A. Yes, sir.
Q. And in 1916?
2888 A. There was water on it there in 1916.
Q. His land wasn't all covered was it?
A. No, sir.
Q. There is a small lake on his land, isn't there?
A. No, sir.
Q. A slough, rather, a large slough, isn't there?
A. There might be a draw, what you call a draw through there, or ravine, something of that kind, which ever you might call it.
Q. Where the water flows in its out let from Lake Traverse?
A. Where the water flows, where the water backs into.
Q. From where?
A. From Lake Traverse.
Q. Does the water back from Lake Traverse or does it flow to the northeastward?
A. It flows.
Q. Which way?
A. North.
Q. Then it doesn't back, does it, Mr. Bruns?
A. Well, it does when it gets up over the level. I don't know whether you call it flow or sprawl.
Q. And in 1916 about how many acres of Mr. Erickson's ground was not covered?

Mr. Bronson: Objected to as not proper cross-examination.

A. I don't know anything about that positively.

Mr. Palmer:

Q. About how many acres of the quarter north of you, I think it is owned by Mr. Waddington's brother, about how many acres of that was covered?
A. I can't state.
Q. What part of the land was not covered?
2889 A. Some of the northwest corner, and some of the east.
Q. Some of the east half?
A. Some of the east half of the quarter.
Q. Was it covered with water down adjacent to your land?
A. No, sir.
Q. Now on the west of your land, who owns that?
A. W. H. Briden.
Q. Was that covered with water?
A. Why, not all of it.
Q. Which part of it was not?
A. The smallest part.

Q. With respect to your land, whether it was partly adjacent to your land?

A. It was part of that land, covered.

Q. That lay next to your land?

A. Yes, sir.

Q. That is where that draw goes up through it, doesn't it, from the south?

A. From the south?

Q. Yes.

A. Well, that draw lays within about 80 rods of my land.

Q. That had water in it?

A. Indeed.

Q. But did the land around it, outside of the draw?

A. Yes, sir.

Q. Clear over to your line?

A. Yes, sir, within a short distance.

Q. As I understood it, there was no water standing on the south of your land?

2890 A. No, sir.

Q. No water on the east of your land?

A. No, sir.

Q. No water on the north of your land?

A. No.

Q. And a little water on the west of your land?

A. On the west of my land?

Q. Yes.

A. Not on my land.

Q. But on the land west of your land?

A. Yes, sir.

Q. And then you ascribe the wet conditions in 1916 to your land to seepage from the water standing around your land?

A. Yes, sir.

Q. You ascribe nothing to the rainfall of that season?

A. No, sir.

Q. There was no rainfall in 1916?

A. There certainly was.

Q. Then some must have fallen upon your land?

A. Yes, sir.

Q. And a great deal fell upon your land, didn't it?

A. Why, probably a little more than normal.

Q. Didn't you have in 1916 according to your information, the highest amount of rainfall that has ever been known in this section of the country?

A. I didn't keep track of it.

Q. You don't know anything about that?

A. Isn't it true that you had excessive rainfall throughout the season of 1916?

A. Why, we had a little more rain than usual.

Q. Then there naturally would be upon your land and all other lands more water than usual, wouldn't there, Mr. Bruns?

2891 A. There might be, yes, sir.
Q. And this water, this unusual wet condition upon your land, was due to the rainfall wasn't it, in 1916?
A. No, sir.
Q. Not at all, not part of it?
A. Probably part of it, but not entirely.
Q. A part of it was due to seepage of water on the surrounding lands that wasn't there?
A. Yes, sir.
Q. You say you bought this land in the fall of 1913?
A. Yes, sir.
Q. That was a dry fall, wasn't it?
A. Well, I don't think it was any dryer than this fall.
Q. Was it as dry as this fall?
A. It was dry.
Q. And this land was dry?
A. Yes, sir.
Q. And the surrounding land was dry?
A. Yes, sir.
Q. When you bought it?
A. Yes, sir.
Q. And you paid $55 an acre for this land?
A. Yes, sir.
Q. To whom?
A. Well, the party holding it is E. L. Clark and another, of Chicago.
Q. Parties in Chicago owned it?
A. Yes, sir.
Q. And sold it to you through a land company?
A. Sold it to me through his brother.
2892 Q. His brother is a land agent at White Rock?
A. Yes, sir.
Q. Did you pay cash for the land?
A. As much as I could.
Q. Well, it wasn't a trade, I mean?
A. No, sir.
Q. And this land agent, Clark, brother of the owner, sold it to you in the fall of 1913, for $55 and acre?
A. Yes, sir.
Q. I suppose he told you it was a dry quarter?
A. I didn't ask him, it laid good.
Q. I suppose he told you the land around was dry?
A. I didn't ask him that.
Q. Didn't you care to know anything about it?
A. I didn't buy the surroundings, I just bought the one piece of land, and that laid to suit me, so I bought it.
Q. You didn't make any inquiry as to whether the land around it was overflow or not?
A. No, sir.
Q. Nor if ever any part of this was overflowed?
A. No, sir.

Q. Did you ask how long those parties had owned this land?
A. No, sir.
Q. Did you ask them what they paid for it?
A. No, sir.
Q. Did you ask them what land around there was selling at?
A. Not that I recollect of.

Q. Did you ask them who was occupying the land when
2893 you bought it?

A. There was a party living there when I bought it.
Q. Who was it?
A. The name was Clark.
Q. Was that the owner, or tenant?
A. No, sir, it was not the owner.
Q. Then he was a tenant by the name of Clark?
A. Yes, sir.
Q. Do you know how long he had been there?
A. That was his first year.
Q. You were not here before 1913, were you?
A. No, sir, he was there in 1913.
Q. And your information was that that was his first year?
A. That is as near as I can tell.
Q. Did you ask who has been on there before that?
A. I found out that a party by the name of Kettleson had.
Q. Where did he live?
A. He lived on it, there at the place.
Q. At the time you bought the land?
A. No, sir, Clark lived there.
Q. Where did this former tenant live?

Mr. Bronson: Objected to as not within the knowledge of the witness, hearsay.

A. I don't know.

Mr. Palmer:

Q. Did you ever talk with him?
A. No, sir.
Q. Did you inquire where he was?
A. No, sir.

Q. Did you inquire what crops he had raised?
2894 A. No, sir.

Q. Or how long he had been there?
A. I didn't see Mr. Kettleson or have any conversation with him at all about it. I spoke to Mr. Clark, the fellow that was on the place.
Q. You talked with this land agent, Clerk?
A. No, the tenant Clark.
Q. Did he tell you what crops he had that year?
A. He told me that he had——
Q. I say, did he tell you what crops?
A. He told me he had a good crop.

Q. As to prior years you made no inquiry?
A. No, sir.
Q. I forgot whether I asked you anything as to the market value of lands around there?

Mr. Bronson: You did ask him that.

Mr. Palmer:

Q. What information did you get?
A. What is that?
Q. As to the market value of lands around there.
A. What they were worth?
Q. Yes, what they were worth at the time you bought.
A. I didn't ask that.
Q. That land lay within a short distance of White Rock?
A. A mile and a half.
Q. What distance from Blackmer?
A. About 3 miles, I should judge, I am not positive on that.
Q. And a mile and a half from Market, and you got it at $55 an acre?
A. Yes, sir.
2895 Q. What class of buildings did it have on it?
A. Practically the same as it has on it now, only I have remodeled some, a little.
Q. Are those pretty good buildings, or fair buildings?
A. Yes, sir, fair buildings.
Q. You spoke of having to use a boat in 1915 and in 1916. Did you make inquiry as to whether parties who lived on the farm had always used a boat to get to market?
A. No, I don't thank there has been a boat used there to speak of at any length of time, by the exception of one year before this.
Q. Did you ever see this land before 1913?
A. No, sir.
Q. Where did you live prior to 1913?
A. I lived in Clay County, Iowa.
Q. What time did you come up here?
A. Came up here in October 1913.
Q. Did you ever see this land of yours before?
A. No, sir.
Q. Then what do you know about whether a boat had been used there one year or 25 years prior to 1913, except what comebody told you about it?
A. You are right.
Q. Somebody told you that there had not been a boat used there but one year before?

Mr. Bronson: I object to that as *here* hearsay, simply encumbering the record.

A. No, that is not, I couldn't answer the question that way at all, because that would be specifying one special year to answer the question.

2896 Q. Did you know that Mr. Johnson, who had lived on that land a great many years, and who sold it in the year 1906, lived right there in White Rock at the time you bought this land?
A. No, sir.
Q. And of course you had no talk with him about it?
A. No, sir.
Q. Did you know what these Clarks paid for the land?
A. No, sir.
Q. Inquire at all?
A. No, sir.
Q. Or did you know what the parties who owned it before they did paid for it?
A. No, sir.
Q. Now, Mr. Bruns, you had in general on this land about as good a crop in 1916 as anybody raised on this locality?
A. Yes, sir.
Q. And take it all of the surrounding territory, even outside of this Bois de Sioux valley, weren't there wet conditions prevailing through 1916?
A. Yes, sir.
Q. Now, if you had substantially as good a crop as other people in 1916, and your crop was affected only by wet conditions the same as others, why have you put in a claim for damages for that year?
A. Damages of 1916?
Q. Yes.
A. I didn't have no crop in 1916—1915, was when I had a crop.
Q. You understood me to say 1915 in my former question?
2897 A. Yes, sir.
Q. I said 1916, and if you wish to change your answer do so.
A. It was 1915 I am answering about. 1916 I had no crop. I put in 30 acres of wheat.
Q. You had some crop?
A. I put in 30 acres of wheat.
Q. Didn't you have any crop whatever in 1916?
A. No crop excepting the 30 acres of wheat, as I said.
Q. Didn't you cut any of that?
A. About 4 acres of that.
Q. And other people entirely outside of this Bois de Sioux valley lost their crops that year on account of wet conditions, didn't they?
A. I don't know.
Q. In 1917, what yield of corn per acre did you get?
A. Well, I got about 12 bushels.
Q. And you think you would have got 17 if your land had been right?
—. ——.
Q. After a year like 1916, any land would be wet and sour wouldn't it, Mr. Bruns?
A. It might be.
Q. And you got that land on the market?
A. No, sir.

Q. Have you contributed anything to the expense of instituting and maintaining this action?

A. No, sir.

Q. You know Mr. Nelson, the surveyor?

A. No, sir.

2898 Q. That did some surveying in this territory this past season?

A. Not acquainted with him.

Q. Did you talk with him at all?

A. I don't think so.

Q. I say, did you talk with anybody who was there surveying?

A. Yes, sir.

Q. And did you not say in substance to that party who was surveying that you has no claim for damages in this suit, and that you had refused to contribute anything to bring this action?

A. No, sir, I don't think I told anybody that, that I refused to contribute anything.

Q. Didn't you say you had no claim for damages?

A. I didn't have no claim, nor didn't have until I did put in a claim. I didn't have at that time.

Q. You didn't learn of your claim until just prior to your testimony?

A. Oh, yes, I learned of this claim a long time ago.

Q. You didn't mention it, though, did you, to anyone?

A. I don't know as I did. I mentioned it,——

Redirect examination.

By Mr. Bronson:

Q. To what extent have the flood conditions impaired the market value of your land?

A. It is very hard to estimate that only by the values and raising of crops, the conditions of that. I should estimate it a- $20

2899 an acre.

Q. You simply made the claim as stated, for the damage you have sustained?

A. Yes, sir.

Recross-examination.

By Mr. Palmer:

Q. That is, the flood that was not on your land, damaged your land $20 an acre, Mr. Bruns? That is your testimony?

A. Yes, sir, it damaged the community of the land and the land itself that amount.

(Recess is taken until 1.15 p. m.)

2900 Nov. 14, 1917, at 1:15 p. m.

ORVILLE C. ANDREWS, being sworn in behalf of complainant, testified as follows.

Examined by Mr. Pinkney:

Q. What is your age?
A. 41.
Q. What is your place of residence?
A. Fairmount.
Q. How long have you lived in Fairmount.
A. I don't live right in town, I live at the east edge of town. I lived there one year right out here.
Q. How long have you lived in Richland County, North Dakota?
A. Eight years.
Q. Do you own any land in Fairmount township, Richland County, North Dakota?
A. Yes, sir.
Q. Describe it.
A. Southwest quarter of 21, 130, 47.
Q. How long have you owned that quarter section of land?
A. About two years, two years next February.
Q. Do you own any other land in Richland County?
A. No, sir.
Q. Did you buy it in February, 1916?
A. Yes, sir.
Q. You may state whether or not any portion of that quarter section was covered by those flood waters we had in this township in the year 1916?
A. None of that was, no, sir.
2901 Q. Did you produce a crop on it in 1916?
A. Part of a crop, yes, sir, on some of it we had a crop, and one some we did not.
Q. Where did you live in the years 1914 and 1915?
A. Northwest of 20.
Q. The description of that is the west half of the west half of section 20, and the East half of the Northwest quarter and the northeast quarter of the southwest quarter, of section 20 129, 47, is that right, 280 acres?
A. Yes, sir.
Q. Where did you reside in the years 1914 and 1915?
A. On section 20.
Q. How long had you resided on the lands in Section 20?
A. Seven years.
Q. What were you doing, farming?
A. Yes, sir, farming.
Q. Were any portions of those lands in Section 20 affected by those flood waters in the years 1915, 1916, and 1917?
A. Yes, sir.

Q. Will you give the number of acres that were flooded in Section 20 that you owned in the year 1915?

A. About 180 acres of it in 1915. In 1916 there was about 240 acres of it.

Q. You wasn't there in the year 1917?

A. No, sir.

Q. In the year 1915 did you have any crop growing on the 180 acres of land that was flooded that year?

A. Yes, sir, I did.

2902 Q. Did you harvest any of the crop on that 180 acres in the year 1915 on the flooded land?

A. About one-half of it.

Q. You harvested about half of the crop on the 180 acres that was flooded?

A. Yes, sir.

Q. Will you tell us what crops you had in on the 180 acres.

A. I had 40 acres of wheat, 40 acres of oats, and about 30 acres of barley.

Q. That would be 110 acres?

A. Yes, sir.

Q. What was on the other 70 acres?

A. Some oats and wheat, and a little barley, I cut a little of the barley.

Q. I ask you to give me all the crops that was on the 180 acres of flooded land in the year 1915?

A. I haven't got it just exactly figured out, just how many acres there was altogether.

Q. You stated there was 180 acres flooded in the year 1915. You stated you had 40 acres of wheat, 40 acres of oats, and 30 acres of barley that was in that flooded 180 acres. That leaves 70 acres still to be accounted for. What did you have on the other 70 acres?

A. There was probably more wheat then I gave you. I didn't have that figured up separately. I was giving you what was drowned out, what I actually lost.

Q. Is this what you actually lost on there?

A. Yes, sir.

2903 Q. Did you harvest any wheat grown on this land in 1915?

A. Yes, sir.

Q. And did you harvest any oats grown on this land in 1915?

A. Yes, sir.

Q. Did you harvest any barley?

A. Yes, sir, a little.

Q. Was this 40 acres of wheat that you lost as good wheat before it was flooded as the wheat that you harvested?

A. Yes, sir, I think it was every bit as good.

Q. What did the wheat that you harvested yield per acre?

A. 22 bushels.

Q. Was this 40 acres of wheat that was flooded and lost as good as that, in your judgment?

A. Yes, sir, I think it was a little better. It was on the best land of the two.

Q. Have you computed what the value of that 40 acres of wheat would have been to you if you could have harvested, threshed, and marketed it?

A. Yes, sir.

Q. Tell the court what the value of that 40 acres of wheat was as it stood on the land prior to the time it was destroyed by the flood waters.

A. It would be about $880.

Q. In reaching those figures, have you deducted all expenses you would have been put to to harvest, thresh and market the wheat?

A. No, sir, I haven't deducted that yet, but that leaves
2904 a balance after deducting all expenses, about $818.40.

Q. That is the value of the wheat crop as it stood on the land just prior to its being destroyed?

A. Yes.

Q. Now what did the oats yield that you cut on the place this year, that were not drowned out?

A. About 33 bushels.

Q. How did the 40 acres of oats that were drowned out compare in promise of a crop with those that made a yield of 33 bushels?

A. I think they were as good, if not a little better.

Q. Have you computed what the value of those 40 acres of oats were as they stood on the ground just prior to their being destroyed by the flood waters?

A. Yes, sir.

Q. Give the Court their net value as you have computed it.

A. $360.

Q. Now in reaching those figures have you deducted all of the expense you would have been put to in harvesting, threshing and marketing the oats?

A. No, sir, it would leave a balance of $320 after deducting the expenses.

Q. With respect to the barley that you threshed, any barley produced on this section 20 in the year 1915?

A. Yes, sir, I threshed some.

Q. What was the barley that you threshed, what was the character of the crop of barley, 30 acres of barley lost, as compared with the barley that you threshed?

A. I think it was just as good.

2905 Q. How many bushels to the acre did you get on that you threshed?

A. That was pretty hard to tell, it was cut in patches but a fair estimate on the barley would have been somewhere along about 40 bushels, I think.

Q. That is, on the barley that was drowned out on the 30 acres?

A. Yes, sir.

Q. Have you computed the value of that 30 acres of barley as it stood on the ground just prior to the time that the flood waters came upon it?

A. That would be about $520.

Q. Is that a net value?

A. No, sir, $488.80.

Q. That is the value, as I understand you, of the 40 acres of wheat and 40 acres of oats and 30 acres of barley on the field just prior to the time they were destroyed by the flood?

A. Yes, sir.

Q. And that is the amount you computed after deducting all expenses of harvesting, threshing and marketing?

A. Yes, sir.

Q. In the year 1916, did you have any crops growing on these lands, there 240 acres that you say were flooded, at the time the flood waters came on it?

A. I didn't farm any of it at all.

Q. No part of it?

A. No, sir.

Q. Why not?

A. It was too wet.

Q. What made it?

2906 A. Well, the flood waters did it.

Q. No part of it could be farmed?

A. No, sir.

Q. Have you computed its rental—what its rental value would be for the year 1916 on the crops you would have raised on it?

A. Yes, sir.

Q. What is that amount that you computed?

Mr. Palmer: Objected to as not the proper measure of damages.

A. $1,174.10.

Mr. Pinkney:

Q. In arriving at the figure, have you deducted all the expenses of producing, harvesting and marketing the crop?

A. Yes, sir.

Q. Leaving a net loss to you of $1,174.10?

A. Yes, sir.

Q. You have sold that land, have you?

A. Yes, sir.

Q. But you know the condition in which these floods left it, do you?

A. Yes, sir.

Q. And that condition with respect to these lands in Section 20, was the condition that generally prevailed on other flooded lands in this territory, wasn't it?

A. Yes, sir.

Q. What condition was it left in?

A. Well, it was left in bad condition, all grown up to cat-tails and one thing and another.

Q. Grown up to cat-tails and other foreign weeds?

2907 A. Weeds of this kind.

Q. So far as you have observed, and I take it that you know

genecally the condition of these flooded lands in this territory do you not?

A. Yes, sir.

Q. As they existed in 1915, 1916 and 1917?

A. Yes, sir.

Q. Did these lands of yours in 20, were those other lands of a similar character with yours?

A. Yes, sir.

Q. Have you any opinion as to what would be the damage to the lands; that is to say, what it would cost per acre to restore these flooded lands to their former condition of tillage and arability, how much per acre?

A. I would hate to contract for $10 — acre for some of them, to put them back in shape.

Q. Are you speaking with reference to those lands of yours in 20?

A. Yes, sir, I will take the long quarter where I live. I wouldn't put it back for $10 an acre.

Q. What was the condition of that quarter just spoken of by you, fairly representative of the flooded lands in this flooded district in the years 1915 and 1916 and 1917?

A. Yes, sir, it was.

Q. Do I understand then that your opinion would be that these flood waters have damaged these lands in the flooded area, generally speaking, to what extent per acre? To restore the lands to their former productive state?

2908 A. I would say $10 an acre.

Q. Now, I understand that you have disposed of these lands in section 20?

A. Yes, sir.

Q. You are not making any claim in this case for any damages to this land?

A. No, sir, none at all.

Q. In the year 1917?

A. No, sir.

Q. How long did you own the land in section 20?

A. Six years?

Q. Did you cultivate them yourself practically all this time?

A. Yes.

Q. You may tell the court whether or not from the time you owned them up to the year 1915, you produced and harvested crops grown on them every year?

A. Yes, sir.

Q. Was there ever a year during the time you owned them that the waters, the flood waters or any other waters, prevented you from raising regular crops on them every year?

A. No, sir, not any.

Cross-examination.

By Mr. Palmer:

Q. You recollect just what year you got the land?
A. March, 1909.
Q. Had you seen the land prior to the time you bought it?
A. I was here a week or two looking it over during
2909 that time.
Q. Where did you live at that time?
A. Illinois.
Q. Had you ever seen any of the lands in this locality prior to the spring of 1909.
A. No, sir, I never did.
Q. You had always farmed and lived in Illinois?
A. Yes, sir.
Q. 1909, was it apparently a dry spring or a wet spring?
A. I think the spring was dry.
Q. How was the summer of that year?
A. It got somewhat wet along in harvest time. I was up here in August, and it was quite wet then.
Q. You didn't move upon the land in the spring——
A. Not until October that fall.
Q. And you were here, you say, a few weeks in the spring?
A. I was here one week in the spring.
Q. In 1909, then you returned to Illinois?
A. Yes, sir.
Q. And didn't come back again until October, 1909?
A. No, I was here in August of 1909.
Q. And then you moved onto the land in October?
A. Yes, sir.
Q. At the time you bought the land, was there anybody in occupation of it?
A. Yes, sir?
Q. Who was it?
A. A fellow by the name of Johnnie Eppler.
Q. Was he the owner of the land?
A. No, sir, he was not.
2910 Q. He was a tenant upon the land?
A. Yes, sir.
Q. Who was the owner of the land?
A. Crandall Flynn and Tuttle Land Co.
Q. This land company, where was it located?
A. I think their branch office was here, but I think their main office was in St. Paul.
Q. They had a branch office at Fairmount, North Dakota?
A. Yes, sir.
Q. Their main office was in St. Paul?
A. Yes, sir.
Q. How did you get in touch with these men?
A. Through one of their agents.

Q. Do you know how long they had owned the land, this land company?
A. No, I couldn't say as to that, I don't know.
Q. You made no inquiry concerning that?
A. No, sir, I did not.
Q. What did you pay for the land?
A. $50 an acre.
Q. Was it a trade or cash proposition?
A. Part cash, I traded some city property in on it.
Q. Where was the city property located?
A. Lexington, Illinois.
Q. Was that property on which you lived?
A. Yes, sir.
Q. You traded that in on the land?
A. Yes, sir.
Q. Did that constitute substantially your first payment upon it?
A. Yes, sir.
2911 Q. Did you inquire as to what the land company had paid for it?
A. No, sir, I did not.
Q. Did you make any inquiries whatever concerning its fair market value?
A. Yes, sir.
Q. Where did you make that inquiry?
A. From business men in town, in Fairmount.
Q. Wholly disconnected with the land company?
A. I couldn't say as to that, I don't know a thing about it.
Q. Did you ask at what price it had ever been bought or sold?
A. No, sir, I did not.
Q. Well, did you ask how long it had been a tenant farm?
A. No, sir, I did not.
Q. Did it have buildings upon it?
A. Yes, sir.
Q. What was the character of the buildings?
A. They was in pretty fair shape, the barn was run down some, the house was in good shape.
Q. Were they old buildings, or comparatively new buildings?
A. The barn was a comparatively new barn, but had never been taken care of.
Q. Was the place in rather a neglected and run down condition?
A. No, sir, it was not.
2912 Q. At the time you bought it, did you look at the government plat to see whether it was land designated as swamp or marsh land?
A. No, sir, I did not.
Q. Let me call your attention to defendant's exhibit 108, directing your attention to the west half of section 20. I will ask you of the area there marked as marsh land corresponds substantially to the low land upon the premises as you found it?
A. There is some of that is low land there.
Q. Is the low land substantially as it is marked upon the plat?

A. Yes, sir.

Q. If you had known, Mr. Andrews, that so large a portion of this farm was designated as marsh and swamp, would you have purchased it at that time at $50 an acre?

A. I couldn't say as to that now, whether I would or not.

Q. Do you think, with so large a proportion of that land designated as marsh or swamp land, that it was of a fair market value of $50 an acre at the time you bougth it?

A. It was considered so at the time.

Q. I apprehend the fellows who had it for sale might consider it worth $500 an acre if they could get it. I am asking you now, in the light of your information, whether that was a fair value for it, or whether it was too much at the time you bought it?

A. I think it was most too much for it at that time.

Q. I observe on the south line of this land of yours there is a public highway. That is correct is it?

A. Yes, sir.

Q. And that there appears to be on the highway, the south line of your land, two bridges, one steel bridge 32 feet span, and one
2913 wooden bridge of 16 foot span. Did you see those bridges there when you bought the land?

A. That steel bridge wasn't there, just a wooden culvert there.

A. A wooden bridge across there?

A. Yes, sir.

Q. What span was the wood bridge?

A. About the same size as the west.

Q. When was the steel bridge put in there?

A. About two years ago.

Q. About 1915?

A. I think in the fall of 1915, I am not sure, I think so.

Q. And how much space below the floor of the bridge was there, the wood bridge?

A. I don't know as to that, I couldn't say as to that. I never took particular notice.

Q. Was there 3 or 4 or 5 feet?

A. There must have been 5 feet anyway.

Q. The 16-foot span to the west, was that about the same?

A. No, there wasn't as much space below that.

Q. About what space?

A. Probably 4 feet.

Q. What are those bridges in there for, what do they span?

A. They span the draw for the water to run through.

Q. They span a natural ravine water way?

A. Yes, sir.

Q. Coming up from the south?

A. Yes, sir.

2914 Q. That waterway forms a westerly outlet of Lake Traverse, doesn't it?

A. Yes, sir.

Q. And the water runs northerly and slightly easterly across your land all the way?

A. Both of them doesn't just one of them.
Q. Which one?
A. The westerly one.
Q. The westerly one runs clear across your land and is again spanned by a bridge on the north line?
A. Yes, sir.
Q. The easterly one leaves your land about the middle of the north quarter, does it, on the east side?
A. That comes in on the 80 rod line, on the 120 acres, runs across Mr. Sauter's first.
Q. Mr. Sauter has a 40 in there?
A. 40 acres.
Q. It runs across the quarter where Mr. Sauter's house is?
A. Yes, sir.
Q. Then crosses yours?
A. Yes, sir.
Q. Across the quarter line; and then on northeasterly?
A. Yes, sir.
Q. But those two ravines are well defined?
A. It is not on mine. The east one on mine, there is no ravine there at all, it is all hay land. There was never a ravine through there.
Q. There is a draw there?
A. No, sir, nothing at all; as level a piece of land as any in the county.
2915 Q. I wish you would tell me if there is nothing there, what that bridge at the north line of Section 20 and right close to your northeast corner, is across?
A. That one from the west goes down across there.
Q. But there are two bridges there, are there not?
A. On the north?
Q. Yes, sir.
A. Yes, but there isn't a draw that comes in from the west of mine.
Q. What does it span?
A. There is no draw through mine. Just the east bridge is the one that the draw comes through, there is a bridge there. There was never any draw running through mine from the west at all.
Q. Then that bridge is across absolutely dry level land?
A. There is no draw runs off that farm into it, anyway. That draw that runs across the south end goes into the east bridge; there is none goes into the west bridge at all.
Q. That east bridge isn't on your land?
A. No, sir.
Q. That is on whose land?
A. Sauter's. I am talking about on the north side that is what I am talking about.
Q. That is what I am talking about.
A. The east bridge is the one that carries water from that draw.
Q. What is the west bridge there for?
A. I don't know what it is, unless it is for the water that came

down the road, because there is no draw on that farm
2916 that runs into it.

Q. Is there water that runs down the road from the west?

A. Must certainly be.

Q. In a ditch, is there a ditch there?

A. Part of the way, at least.

Q. Then there is a ditch in there from the west? At your north line, that comes down the road, and brings water down there?

A. Part of the way down, yes, sir.

Q. Does it go clear down to the bridge, the west bridge?

A. Yes, sir.

Q. Where does it come from?

A. I suppose off the public highway.

Q. How long does it extend to the west?

A. I don't think it is more than 80 rods.

Q. Now I take it that that bridge was put in there for drainage purposes?

A. Yes, sir.

Q. And to take the water from some lands that needed drainage?

A. Yes, sir.

Q. Was that ditch in there when you bought the land?

A. Yes, sir.

Q. And those bridges were in there?

A. Yes, sir.

Q. At both ends?

A. Yes, sir.

Q. Then you must have known, did you not, that the
2917 water from the south flowed across that land from north to south, and to such an extent that it had cut out the channel across there?

A. I could see that, yes, sir.

Q. And you simply took your chances on the water coming up there from the south, did you not?

A. I didn't know anthing about the south water at that time.

Q. Why didn't you ask?

A. I did ask, but it is like everything else, you can't find out anything, only yourself.

Q. Especially when you are buying land from a land company?

A. Yes, sir.

Q. Between this easterly and westerly bridge at the north line of 20, extending down southwesterly on your land, is there not a low, wet piece of ground?

A. Yes, sir, there is some wet in there, but it is not at the west bridge, that is the one you have reference to, further west there is another culvert.

Q. Is there still another bridge.

A. Yes, sir, to carry that water out of that draw there.

Q. Isn't there a strip of low, wet land extending southwesterly from those draws at the north line down into your land?

A. Yes, sir.

Q. What did you use that land for?

A. I farmed it all the time.
Q. What did you farm it in?
A. All kinds of grain in there.
Q. On that low piece of land on there?
A. Yes, sir.
2918 Q. You cropped that land first in 1910?
A. I got the crop off of it in 1909, and I farmed it myself first in 1910.
Q. Who put the crop in in 1909?
A. Johnnie Eppler.
Q. And you simply got a share of that?
A. Yes, sir.
Q. Did this share of the crop of 1909 go with the place at $50 an acre?
A. Yes, sir.
Q. What were your returns that year?
A. Something like $2,800.
Q. Your share?
A. Yes, sir, after all expenses was paid.
Q. Did you pay the taxes for that year?
A. Yes, sir, I did.
Q. Did you take that out?
A. Yes, sir.
Q. 1909 was a dry year except in harvest time?
A. Yes, sir.
Q. 1910 was a very dry year?
A. Yes, sir.
Q. 1911 was a very dry year?
A. Yes, sir.
Q. 1912 was a very dry year?
A. Not so dry, no, sir.
Q. Did you have a good crop in 1912?
A. Very good crop, yes, sir.
Q. Did you farm this low land that year?
A. Yes, sir.
2919 Q. Was there any land around there that was wet in 1912?
A. Not that I know of, not enough but what they got a crop.
Q. 1912 was a little wet?
A. More rain than we had the other two or three years.
Q. 1913?
A. Got a crop again off of it.
Q. That was a little wetter still?
A. Yes, sir.
Q. And 1914 was a little wetter still?
A. No, sir, it was not; it was the average rainfall that year.
Q. The month of June 1914, do you remember anything about that?
A. I guess we did have quite a little rain in June, but not much above the average.
Q. Was your land wet?

A. No, sir.
Q. Did you have a good crop in 1914?
A. Yes, sir.
Q. In 1915 had still more wet?
A. We didn't have any excessive rainfall at all that year.
Q. What are your recollections about the summer of 1915 as to rainfall?
A. I don't think we had any excessive rain at all.
Q. How about the fall of 1915?
A. I don't remember that we had any extra rain that fall, either.
2920 Q. Do you remember whether it was a wet fall?
A. Well, the ground was awful wet around there, anyway.
Q. Ground was awful wet everywhere that fall, wasn't it?
A. Yes, sir.
Q. And hard to plow on that account?
A. I didn't think it was.
Q. Did you see any of the lands outside of the lands in this valley that fall?
A. Yes, sir.
Q. Not wet at all?
A. I don't think there was any excessive rainfall.
Q. Where did this water that was on your land in 1915 appear to come from?
A. It came from the south.
Q. Up this ravine?
A. Yes, sir.
Q. And spread out on your land?
A. It didn't come up the ravine all alone, it came all over all at once.
Q. It didn't come up the ravine?
A. No, sir, it was all over the land.
Q. It came from the west?
A. No, sir, it came from the south.
Q. All together?
A. I should -ay it did.
Q. You couldn't tell as to whether that water was coming from the south or the east or the west, could you?
A. I could not? I was down there often enough.
Q. Tell me what you recollect about it?
2921 A. Yes, I can tell where it was coming from.
Q. And you think it came from the south?
A. I know it did.
Q. And there was some rainfall?
A. Might have been a little rain, wet.
Q. 1916 you had still more rain, did you?
A. Yes, sir.
Q. And your land was still wetter?
A. The water never left it through 1915 was the reason.
Q. And 1916 there was still more water fell?
A. Yes, sir.

Q. All the season, wasn't there?
A. Yes, sir.
Q. And you wouldn't undertake to say that the rainfall of 1916 had nothing to do with the presence of water?
A. I didn't say that at all.
Q. You are not saying it now, are you?
A. No, sir, I am not.
Q. In the fall of 1916 you threw up this land, turned it back to the land company?
A. Yes, sir.
Q. And let them take it?
A. Yes, sir.
Q. You haven't encountered, since you had been there, no wetter year in the matter of rainfall than the year 1916, had you?
A. No, sir.
Q. At what price did you turn it back to the land company?
A. I didn't get much out, I tell you that.
Q. You still had some payments to make on it?
2922 A. Yes, sir, I did.
Q. To what extent?
A. I didn't have it half paid for yet.
Q. Then you had at least $25 an acre back on it?
A. Yes, sir.
Q. You got released from that obligation?
A. Yes, sir, I did.
Q. How much did you get in addition to that?
A. Probably $1,000.
Q. That is they gave you about $1,000 in cash?
A. I didn't say that, that they gave me $1,000 in cash. I got that out of the crop. They released me on the crop the year before, and I could have what I got out of it.
Q. They gave you the crop of 1915?
A. Yes, sir.
Q. And they took the land off your hands and relieved you of the obligation?
A. Yes, sir.
Q. Then you came up here by Fairmount?
A. Yes, sir.
Q. And bought the southwest quarter of Section 21 in Township 130, Range 47?
A. Yes, sir.
Q. That was out of reach on this river?
A. I hope so.
Q. Did you make inquiry as to whether this land that you bought last was out of reach of the overflow?
A. I had known it for 7 years, I thought I knew enough about it to know.
Q. This land in 21 that you bought away from the river was adjoining the town site of Fairmount?
2923 A. Yes, sir.
Q. And you bought it in the fall of 1916?
A. No, sir, I bought that in March, 1916, no, in February, 1916.

Q. You bought other land, then, before you had the heavy flood of 1916?
A. Yes, sir, I did.
Q. You figured on getting out——
A. While the getting was good.
Q. —of this section 20 down in the southern township?
—. ——.
Q. This land that you bought up in section 21, township 130, had buildings on it?
A. Yes, sir.
Q. Good buildings?
A. Yes, sir.
Q. Adjoins the townsite?
A. Yes, sir.
Q. Is it in good state of cultivation?
A. Yes, sir.
Q. Fences?
A. Yes, sir.
Q. Orchard?
A. Yes, sir.
Q. A good farm, an excellent farm?
A. Yes, it was considered so.
Q. May I ask what you paid an acre for it in February, 1916?
A. $103.
Q. Have the land company placed this land down in section 20 of Township 129 on the market?
2924 A. I don't know anything about it.
Q. Now, did you compute this loss of 1916?
A. I took one half of what the cost would have amounted to if it had been rented.
Q. And you got $1,174.10?
A. That is what I did.
Q. That would be, then, altogether $2,348. And you think that would have been the total net value of that crop?
A. I suppose so.
Q. Of 1916?
A. Yes, sir.
Q. You suppose so? Is that merely a guess?
A. I said yes, sir.
Q. That is about $10 an acre?
A. About that.
Q. What land do you know of in this locality that paid net rentals of $10 an acre in the year 1916.
A. Probably didn't do it, but would have done it if we hadn't had so much water.
Q. What land do you know of, inside of this Bois de Sioux valley or out, that pays net returns of $10 an acre in the year 1916?

Mr. Pinkney: We object to that question as incompetent and immaterial, and not tending to prove anything, and improper cross-examination.

A. I know some potato land that did.

Mr. Palmer:

Q. You figured on putting in 240 acres of potatoes on this land in 1916?

A. No, sir, I didn't say that.

Q. I ask you again, what land do you know of in this
2925 locality that paid net returns of $10 an acre in the year 1916?

A. I didn't investigate to find out.

Q. Why do you say, if you don't know anything about it?

A. I didn't say it.

Q. You did, you said that this land would have brought you——

A. I was just figuring a fair estimate.

Q. Do you think that is a fair estimate for 1916?

A. Yes, sir, it is, for ordinary years.

Q. 1916 was not an ordinary year, was it?

A. I didn't say it was, I am just taking the average for the years, and $10 is not out of the way.

Q. I want you to tell me what that $1,174.10 which you figured here for 1916 was?

A. That was the rental value I figured on the land.

Q. On how much land?

A. 280 acres.

Q. The entire 280 acres?

A. Yes, sir, I didn't farm any of it.

Q. Do you say now that 20 acres of your land was flooded in the year 1916?

A. It was so wet I couldn't farm it, yes, sir.

Q. Did you say on direct examination, when you were asked how much of your land was flooded in 1916, 240 acres?

A. That is what it was, actually flooded, and the other was so wet I couldn't farm it, and I didn't care to farm it.

Q. Did you farm any part of it, then, in 1916?

A. I plowed some of it in the fall, and put some oats on some of it, but it didn't amount to anything.

2926 Q. Did you cut any hay on it in 1916?

A. Not a bit.

Q. Then as I understand it, your estimate here of $1,174.10 on 240 acres, as the one half share, you intended as the returns, as one-half of the returns on 280 acres?

A. Well, I guess you can figure it that way.

Q. I want to know how you figure it.

A. That is the way I figured it.

Q. You say that this wheat that you had standing in the field in July, 1915, was of the same market value of $20 an acre?

A. Yes, sir.

Q. Did you ever see wheat sold in the field in July in your life?

A. No, sir.

Q. And would you have gone out on the market and paid $20 per acre for wheat in July 1915, and taken your chances on getting a crop?

A. I don't know whether I would or not. I don't know as I would.

Q. You have figured the barley in 1915 at $16 an acre in the field. Did you ever know of any barley being sold in the field in July at $16 an acre?

A. No, sir.

Q. And would you have paid on the market $16 an acre for such barley as this was in July, and taken your chances on getting a crop?

A. It was all drowned out in July.

Q. Well, now, tell me when it was drowned.

A. Water came up in June, the latter part of June.

Q. All right, in June; would you have paid $16 an acre for barley in June?

2927 A. No, sir, I wouldn't.

Q. When you figured those damages, Mr. Andrews, in both 1915 and 1916, you figured a certain amount of wheat per acre, and oats and barley per acre, providing that they had grown to maturity, been harvested and threshed and taken to market, didn't you?

A. Yes, sir.

Q. Have you made a contribution toward the expense of instituting and maintaining this suit?

A. No, sir.

Redirect examination.

By Mr. Bronson:

Q. Counsel asked you if you bought some land out of the reach of this river, presumably referring to the overflow that has occurred along this river, and I will ask you to state whether or not you referred to the flood conditions of 1915 and 1916 as to being out of reach of this river?

A. Yes, sir.

Q. How far are these lands from the Bois de Sioux river in 21?

A. About a mile, I guess, from the river.

Q. Who adjoins you on the east?

A. Charley Pinkney.

Q. At the present time, you mean?

A. Yes, sir.

Q. You have related about the crop conditions from 1909 up to 1915. Now, did you have some rain in those years?

A. Yes, sir.

Q. And you produced crops every year?

A. Yes, sir.

2928 Q. And harvested them every year?

A. Yes, sir.

Q. And your crops, you may state whether the loss of your crops in the years 1915 and 1916 was due to the flood conditions that existed from waters coming from the south?

A. Yes, sir.

Q. Were you down to Lake Traverse in 1915 or 1916?

A. No, sir.

Q. Counsel asked you a question about figuring so much for the barley standing in the field, and the wheat standing in the field. I will ask you whether or not in your computation you figured the value, the market value of barley and wheat, less the cost of marketing the same?

A. Yes, sir.

Q. In accordance with the promise of the yield that existed at the time those crops were destroyed by those flood conditions?

A. Yes, sir.

2929 CHARLES R. PINKNEY, being recalled in behalf of complainant, testified as follows:

Examined by Mr. Pinkney:

Q. You are the same Charles R. Pinkney that testified in the former hearing of this case, are you?

A. Yes, sir, I am.

Q. Do you hold any official position in the township of Fairmount, Richland County, North Dakota?

A. I do.

Q. What position do you hold?

A. Chairman of the Board of Supervisors.

Q. Does the county organization of the counties of this state consist of a board of supervisors of each township of each county?

A. Township organization, township governing board is called a Board of Supervisors consisting of three members.

Q. And that is true of each county of the state?

A. Yes, sir.

Q. How long have you held this position of Chairman of the Board of Supervisors of Fairmount Township?

A. I have been chairman 7 years out of 9 I served.

Q. What, in a general way, are the duties of the Board of Supervisors of Fairmount Township? What duties are you called on to perform, what matters come under you- charge?

A. They make all purchases of supplies, bridges, and culverts and disburse the moneys. They have the maintenance of public highways, they are overseers of the poor, and are health officers.

Q. In other words, a board of directors for the township?

A. Yes, sir.

2930 Q. As overseer of the highways, and chairman of the board of supervisors of Fairmount Township, is it the duty of your board to look after the repair of the highways, bridges and watercourses located therein?

A. It is.

Q. Do you know whether or not the township of Fairmount sustained any damage to its highways, bridges, or culverts in any part of the township, due to flood waters that are said to have occurred during the years 1915, 1916 and 1917?

A. It did.

Q. Are you able to state how many miles of highways in the

township of Fairmount were damaged or injured by such flood waters?

A. About 17 miles.

Q. Do you mean by that 17½ or 16½ or what do you mean?

A. I mean about as near 17 miles as we could estimate.

Q. Can you state in a general way where the 17 miles of highways were located?

A. I can by referring to my plats here. I have platted it.

Q. You can refer to it, and tell the court where these highways were located?

A. Beginning at the north end of the township in 130, between Sections 10 and 15, almost a mile running back into the next mile.

Q. Which direction?

A. Running west from the river.

Q. For what distance?

A. Running back nearly a mile from the Bois de Sioux river, and then running west from the new bridge between sections
2931 21 and 22, one mile. Then running west from the new bridge between Sections 22 and 27, to back between 21 and 28, a mile and a quarter. That is all I had in Township 130. Getting down in Township 129, beginning at the north end of section 4 between Sections 4 and 5, and running straight south on that line 4 miles and a half, then running east and west between sections 16 and 21 and between Sections 17 and 20 making two miles more. Then between Sections 20 and 29, about at the westerly edge of Section 20, running eastward a little over half a mile, and one mile north of the state line between Sections 32 and 29, and between Sections 33 and 28, two miles. And on the state line about three quarters of a mile on the south end of 34, and a short distance on 33. Those are all running east and west, these last roads. Then going over to another road running north and south, beginning at the north end of the territory between 16 and 15, a mile between 16 and 15, a mile between 21 and 22, and between 28 and 27, another mile; and between 33 and 34, another mile.

Q. That is 17 miles and a fraction over?

A. Yes, sir.

Q. Now, what way and to what extent have these 17 miles of public highway in Fairmount Township, Richland County, North Dakota, been injured or damaged by reason of these flood waters referred to?

A. They were injured——

Q. First, perhaps, you better answer in what manner.

A. They were injured by the submergence of the waters, and by the—as the waters receded, when the crest of the road-bed was just at the level of the water, by the waves lapping back and forth, first from the north and then from the south, getting over the banks.

2932 Q. Washing away the grades is that it?

A. Yes, sir, and the destruction of the bridges.

Q. I didn't ask you about bridges. Answer with respect to the highways.

A. Yes, sir.

Q. The highways were all dirt, I take it?
A. No, sir, we got some we had to do considerable rock——
Q. You mean you had to put it in since?
A. Yes, sir.
Q. I am asking you with reference to the roads before the flood?
A. They were dirt highways.
Q. It was these dirt highways that were washed out and cut away by the flood waters?
A. Yes, sir.
Q. On the 17 miles?
A. Yes, sir.
Q. Were there any bridges or culverts or causeways injured or destroyed?
A. Yes, sir.
Q. Have you knowledge of the number and character of such structures in these highways that were taken out and damaged by these flood waters?
A. Yes, sir.
Q. Will you state to the court what they were and their character.
A. There were for the most part——
Q. How many were there, first.

A. I don't know as I can state the exact number. They
2933 were for the most part small wooden culverts or bridges, that had always been adequate to the carrying of the waters.

Q. Will you tell the court what you mean by the use of the term "small"?
A. From 3 feet wide to 10 feet. I think there was one 12 feet wide.
Q. That is, 12 feet of open surface roadway on which the culverts laid?
A. We mean 12 foot span across the highway, not the width of the bridge, but it left a 12 foot opening for the water. Others had 10 feet, some had three, and some had 2.
Q. About what was the depth of the opening?
A. Almost every one of them, 2 feet.
Q. And were the roads graded up to these culverts on either side?
A. Yes, sir.
Q. How many do you say you had, wooden or otherwise, that were taken out or injured by those flood waters?
A. I may have omitted some of the minor ones, but the principal ones, 6 of them on the Blackmer road, east of Blackmer.
Q. What were they?
A. They were wooden bridges. One of them is a long bridge 120 feet long, and the other is a bridge about 60 feet long, and the other two are wooden culverts, I think they are 3 or 4 feet wide; and then two more west of the long bridge about the same dimensions, 3 or 4 feet wide. Then on the mile south of there on the Waddington road; one bridge, steel bridge, and two other wooden culverts about the same dimensions as the others, 4 feet wide.

Q. Give the dimensions of the steel bridge?

2934 A. I think it is a 24 foot bridge, 24 foot span. Then there were two bridges on the Andrews road, west from Blackmer between Andrews and Mrs. Cleary's.

Q. What was their character?

A. Both wooden bridges, one was 10 and the other 6 foot bridge. Then there was a culvert at Mr. Taylor's corner, of Mr. Taylor's and Gajer's land that was washed out and replaced by a larger one. Then the big bridge out east of town here across the Bois de Sioux river, the approaches there were all washed out, the span of the bridge that was over it was 116 feet, if I remember right, and it has been replaced with a new bridge. Then the bridge at—the approaches to the bridge at what we call the high bridge, two miles north of Fairmount, were also washed out.

Q. That is in Fairmount township?

A. Yes, sir, then there were some minor culverts there, I haven't clearly in mind.

Q. About how many of these small culverts would you say?

A. Possibly half a dozen more scattered all over the township.

Q. That would be in the neighborhood of 20 or 21 bridges and culverts?

A. Yes, sir.

Q. Has the township of Fairmount, through its proper officers, made any repairs to any part of these highways, these 17 miles of highway that were damaged by those flood waters?

A. We have.

Q. How many miles have you repaired?

A. We have undertaken to repair 7 miles.

Q. I don't care how much you have undertaken, how many have you repaired?

2935 A. There are one or two sections we do not call fully finished, about 7 miles, 7½.

Q. You repaired them in what way, what was the nature of the repairs?

A. Raising up the grades and taking out the culverts, that were washed out, and we found to be inadequate on account of the increase- flowage.

Q. Those that were washed out, you didn't take them out?

A. Sometimes the approaches were cut out on each side so we called them washed out, and doubled over cornerwise, we called those washed out. Of course they might remain in the neighborhood, but they were replaced by larger ones, and sections of the grade were raised up.

Q. Do you know what is the expense to the township of repairing this between 7 and 8 miles of those highways that you have completed?

A. Approximately I do.

Q. Will you state what the expense per mile of highway has been, or what the cost per mile of highway has been to the township?

A. I have figured here for three miles $3,881.40 for repairs that we have, for repairs that we can point to definitely for repairing these 7 miles of highways.

Q. How much in addition to that would it cost to build this uncompleted portion of those 7 miles?

A. It would undoubtedly cost $1,000 more to complete those, make them adequate.

Q. That would make the cost per mile of those 7 miles how much?

2936

A. There appears to be about 9 miles I made estimate on.

Q. There there is 9 miles instead of 7?

A. But this $4,881, though, does not constitute the entire outlay of money; it is a little hard to fix it.

Q. What I want to get at is, have you got the figures—have you got in your possession figures showing the cost of those completed 9 miles of highway that you have completely repaired?

A. Yes, sir.

Q. Will you state what that cost was?

A. But I also wish to qualify that by saying these figures are not complete and it is impossible to complete them.

Q. What factors are lacking to make your figures complete?

A. Well, it is a fact that under this county system of road work the road work from the townships all over the state is paid in cash, and the farmers go and work out there—when the township overseer employs them, they work out the road work.

Q. I don't care anything about that. Tell me how much those 9 miles of highways cost the township?

A. I couldn't state it definitely.

Q. Can you give a probable estimate?

A. I can give you the figures of what we paid out for road work and can say 75 or 80% has gone into highways.

Q. Give us the probable cost to the township of Fairmount of those 9 miles of roadways you have completed your repairs on?

A. I have already stated, if we use another $1,000 to complete those works that are now started, it will amount to about $4,880.

Q. For the 9 miles?

A. Yes, sir.

2937

Q. That would be how much per mile?

A. About $542.

Q. $542 per mile; that leaves you 8 miles of highways that were damaged by those flood waters that have not been repaired in whole or in part, as I understand it?

A. Yes, sir.

Q. Have you any estimate as to what the cost to the township will be of repairing the damage done to the remaining 8 miles of highways?

A. Yes, sir.

Q. Will you state what the estimated cost per mile is as to those 8 miles?

A. I think it will approximate about $300 a mile.

Q. I take it then, you think that the damage to those remaining 8 miles is not as serious as to the 9 you have already given?

A. No, sir.

Q. In these repairs that you have made, have you replaced these highways in such manner as to safely accommodate the public traffic over them?

A. We hope so, I think so, yes, sir.

Q. Do those repairs that you have made there put those in the same general safe condition that they were prior to the flood waters of 1915 and 1916?

A. It does.

Q. Will these betterments and repairs you will put on the 9 miles of highways restore them to the same general condition they were in prior to the time the flood waters occurred?

A. I think so.

Q. Which member of your board had charge of the pay-
2938 ments of these items?

A. The chairman of the town board.

Q. Who is the chairman of the town board?

A. I think I stated I was.

Q. And are now?

A. Yes, sir.

Q. And have been since all these damages have occurred?

A. Yes, sir.

Q. And the money has been paid out by the township as you stated?

A. Yes, sir.

Q. And in the amounts you have stated?

A. Yes, sir.

Q. Isn't there $1,000 you figured in this amount for the completed 9 miles that has not been paid out?

A. Yes, sir.

Q. Then you have paid out all of that sum of $4,800 except the $1,000 you say it will cost to fully complete the 9 miles, is that true?

A. I paid out a great deal more than $7,000.

Q. Just answer the question. Does that $4,800 mean that you paid out all that money except $1,000 that would be required to complete it?

A. Yes, sir.

Q. This money, whom did this money belong to?

A. Belongs to the tax-payers of the township.

Q. Belonged to the tax payers of the township of what?

A. Fairmount.

Q. Richland County, North Dakota?

A. Yes, sir.

2939 Q. And is collected by taxation levied upon the property within the township is it?

A. Yes, sir.

Q. These figures you have given, $4,800, include the replacing of the culverts and bridges in those 9 miles?

A. Yes, sir, it does.

Q. And does the estimate you have given as to the cost or repairing the other 8 miles also include the culverts and bridges, etc.?

A. It does.

Q. That is, to put in the same conditions?

A. Yes, sir.

Q. With respect to these 8 miles of road damaged by those flood waters of 1915 and 1916 to which you have referred, is it in your

judgment necessary to put an expenditure of approximately $300 per mile on those 8 miles of road to render them re-sonably safe for public travel and restore them to former conditions?

A. Yes, sir.

Mr. Bronson:

Q. As I understand you, Mr. Pinkney, the township of Fairmount as a municipal sub-division of the state of North Dakota, has actually incurred in disbursements, or will incur in disbursements, the sum of $7,280 as the cost of restoring these highways and culverts and bridges that were damaged and destroyed, or washed out and otherwise impaired by the flood waters in the years 1915, 1916 and 1917?

A. Yes, sir, it will easily aggregate that, and in my judgment it will exceed that.

2940 (Complainant's Exhibits 40, 41, and 42 are marked.)

Q. I show you Complainant's Exhibits 36 to 42 inclusive and will ask you to state whether or not you were present at the time that those pictures were taken, and saw them taken, and viewed the land at the time each of them was taken, to wit: On October 8, 1917?

A. Yes, sir, these are the exhibits, and I was present when they were taken.

Q. And do all of these exhibits represent correctly by photographic reproduction the land which they purport to represent as shown by the photographs?

A. They do.

Q. And is there on the back of each photograph a description of the land covered by each of such exhibits?

A. There is.

Q. Written in your handwriting?

A. Yes, sir.

Q. Exhibit 41, marked on the back the Graue land, situated on Section 15, Township 130, Range 47, is that the land concerning which testimony has been introduced here into the record?

A. Yes, sir.

Q. Partially through Peter D. Smith?

A. Yes, sir.

Q. And Exhibit 40 refers to the Ennis land in Section 15, Township 130, Range 47?

A. Yes, sir.

Q. That is land near the Smith land, is it?

A. Yes, sir, right south of it.

Q. And exhibit 42 marked H. R. Nagel, is that land that
2941 has been described in the testimony as the Nagel land?

A. Yes, sir in Section 8, 129, 47.

Q. And these growths shown on there and testified to by various witness as cat-tails, you viewed and saw those?

A. Yes, sir.

Mr. Bronson: We offer Complainant's Exhibits 40, 41, and 42 in evidence as part of the examination of the witness.

(Complainant's Exhibit 43 is marked.)

Q. I show you Complainant's Exhibit 43, and ask you to state from whom you received that?

A. From the county auditor, F. A. Burton, County Auditor Richland County, North Dakota.

Q. Was that before the assessment, season of 1916?

A. It was.

Q. And after receiving Complainant's Exhibit 43, did you give instructions, or your township Board of Supervisors give instruction to your assessor pursuant to and in accordance with the communication contained in Exhibit 43 as to the assessment for the year 1916?

A. I think our instructions to our assessor were not wholly in accordance with that, because I had a later conference with the chairman of the county commissioners, and our local representative in which they advised me to instruct the assessor to make a reduction of 75% instead of 50, I think it states in there, on these flooded lands.

Q. Did you so instruct your assessor?

A. I did so instruct the assessor.

Q. The board of supervisors of the township of Fairmount?

A. Yes, sir.

Q. Instructed the assessor, Mr. Kurtz?

A. Yes, sir.

2942 Q. To make such reduction in the assessment for the year 1916?

A. Yes, sir, reduction in the assessment on these lands.

Q. And when you say these lands, it refers to these flooded lands?

A. Flooded lands in Fairmount township, Richland County.

Q. That we have been discussing here in the evidence?

A. Yes, sir.

Q. Your township board, did it sit as a board of review when the assessment for the year 1916 was made?

A. It did.

Q. And was a reduction made for the year 1916?

A. A reduction was made according to instructions, and was returned by the assessor.

Q. And was returned by the assessor?

A. Yes, sir.

Q. And your township board so returned it to the county board?

A. Yes, sir.

Q. On these lands so affected by the flood waters, lands we have talked about in the evidence?

A. Yes, sir.

Mr. Bronson: We offer in evidence Exhibit 43 as part of the testimony of the witness.

Mr. Pinkney:

Q. By what authority, if any, have you presented this claim here on behalf of the Township of Fairmount for damages to its public highways?

A. I was instructed to do so by the town board.

Q. Town board of?

2943 A. Town board of supervisors, Township of Fairmount, Richland County, North Dakota.

Q. You have given an estimate of the cost of repairing and replacing 8 miles of highways on which nothing as yes has been done, as I understand?

A. Yes, sir.

Q. On what did you base your estimate of $300 a mile for the repair of such roads?

A. On work we have done on roads of a similar character.

Q. On work you have done on roads where approximately the same amount of expenditure is required?

A. Yes, sir.

Q. And you found that to be $300 a mile?

A. Yes, sir.

Cross-examination.

By Mr. Palmer:

Q. This authority that you received from the town board to present this claim here, was that in writing?

A. The town board held a meeting and voted to present this claim.

Q. They voted to present a claim here of between $7,000 and $8,000 to make repairs on these dirt roads that you have testified about?

A. Not wholly, I didn't so state: the dirt roads, and the bridges and culverts.

Q. How many steel bridges on these roads were totally destroyed in 1915 and 1916?

A. I didn't state that any were.

2944 Q. How many wooden culverts on these roads were destroyed totally in 1915 or 1916?

A. Some 15 or 18 were either destroyed or else they were found to be inadequate, and had to be removed to take care of a larger flowage.

Q. And wherever it was thought best to take out a small culvert and replace it by a larger one in order to make it adequate, you treated it as totally destroyed and figured your damages accordingly, have you?

A. No, sir, I have not.

Q. I ask you again, how many wooden culverts or bridges were totally destroyed by those floods in 1915 and 1916?

A. I think I stated, somewhere 14 or 15 or 16.

Q. The material of which they were composed was destroyed, was it?

A. Why, I suppose you readily see that when a wooden culvert has been in place in a grade for a number of years, and you have got to take it out, you can't take it out intact. The lumber, if it has remained there a few years, would be almost totally destroyed before you can remove it. Of course the splinters are there.

Q. These wooden culverts in due course of time would all have to be taken out and replaced by new ones perhaps by larger ones, wouldn't they?

A. I shouldn't care to assent to the latter part of the question. Of course in due time they would all have to be replaced, because nothing is eternal.

Q. A wooden culvert in a wet spot in the ground would ordinarily last about how long?

A. I should say eight to fourteen years, according to the
2945 season.

Q. Were these culverts, these wooden culverts that were in on these roads, all new culverts?

A. No, sir.

Q. Hadn't some been in as long as 8 to 14 years?

A. Possibly.

Q. But when you figured damages here, you figured on the replacement of those culverts with new ones?

A. Yes, sir.

Q. Now you have figured here for the roads you have repaired, nearly $600 per mile. Is that the amount of claim that the town board instructed you to make here?

A. The town board didn't go into details as to figures, because it is pretty generally understood that the chairman of the board, having paid all the bills, would necessarily know more about the amounts than the other members of the board, so they left that to me.

Q. You have put them in according to your idea?

A. No, sir. I have put them in according to the facts.

Q. Isn't it true, Mr. Pinkney, that new roads 20 feet in width can be built on these prairies graded up all that is necessary and build new of dirt at a contract pice of $250 per mile?

A. We have never had any offers of any such consideration.

Q. Do you know anything about what new prairie dirt roads can be contracted for per mile for their construction?

A. No, sir, I do not. I knew what they have cost us.

Q. And simple repairs on dirt roads in Fairmount township, roads that were good before, in two years' time have been so injured that is cost $600 per mile to simply put in the repairs on it?

2946 A. Where I have so stated, it did.

Q. That is what you want to swear to?

A. Yes, sir. I have sworn to it. Some of them cost a great deal more than $600 a mile.

Q. The simple repairs on them?

A. Yes, sir.

Q. You have made no effect to contract upon the market for the repair of these roads, have you?

A. No, sir, we are following the law.

Q. I want you to take the road furtherest south among those you have described on the state line from section 34, in that section from the Bois de Sioux westerly, and tell me when that road was built?

A. It was repaired in 1914; first built before I came to the country.

Q. It was repaired in 1914?

A. Yes, sir.

Q. Did it need repairing?

A. I should say it did. The whole community down there were outraged because we were suffering them to making them travel over such a road.

Q. What time in 1914 were those repairs made?

A. Middle of October, sometime in October.

Q. That road was badly out of repair then, in 1914?

A. Yes, sir, at this time that I stated.

Q. In October?

A. Yes, sir.

Q. So much so that the residents there were making very bitter complaints about it?

A. Yes, sir.

2947 Q. And so *the* it was impossible for them to travel it?

A. Yes, sir.

Q. And this condition was about as bad as it was in 1917, I mean as it is now?

A. No, it has been worse ever since than it was then; we lost all the money put in there.

Q. Did you make repairs on that road in October, 1914?

A. We did.

Q. Did you place it in good condition for public travel?

A. We thought it was adequate at the time, but we wasn't counting on how much water you would send us from the south, we hadn't correctly estimated.

Q. Did you place that road in the fall of 1914 that particular stretch of road, in suitable condition for public travel?

A. We thought it was in suitable condition but our judgment proved to be wrong.

Mr. Pinkney: That is, after the flood, he is asking you about the fall of 1914.

Mr. Palmer:

Q. Was it adequate at that time for public travel?

A. Yes, sir.

Q. How much did it cost to place that road in adequate condition for public travel in the fall of 1914?

A. About $300 I should think, we put in there.

Q. $300?

A. Yes, sir.

Q. What did you do to it?

A. Raised up the grade and put in culverts there to *to*
2948 let the water pass through.

Q. How many culverts did you put in?

A. I think there were two.

Q. Was there any bridge across the Bois de Sioux river at that time?

A. No, sir, it wasn't at the river.

Q. It was because of other outlets that came up from Lake Traverse that you put the culverts in?

A. I believe so.

Q. You put in two, you say?

A. I think we put in two, side by side, if I remember right.

Q. What size were those culverts?

A. 48" in diameter, if I remember right.

Q. Were they wooden culverts, or metal?

A. Steel.

Q. They were steel culverts?

A. Yes, sir.

Q. Two corrugated steel culverts?

A. Yes, sir.

Q. Each 48" in diameter?

A. Yes, sir.

Q. And did they appear to be adequate to accommodate the water that would come up from the south, and flow to the northeastward?

A. They did at the time.

Q. Were those corrugated steel culverts totally destroyed in 1915 and 1916?

A. No, I think not.

Q. Have you figured them in here as destroyed?

A. No, sir.

2949 Q. What was done with those culverts?

A. I don't know, I haven't looked the matter up, I presume they are remaining there. I don't think the road has ever been traveled since we fixed it.

Q. Wasn't traveled any in the fall of 1914?

A. No, sir, only possibly for a very short time. The water soon rose up so your couldn't pass over it.

Q. For how many years, then, prior to 1914, had that road been impassable for public travel?

A. According to my information, it had never been impassable before.

Q. It was in the fall of 1914?

A. Yes, sir; you stated prior to that, did you not?

Q. Yes, it had never been impassable to public travel prior to 1914?

A. That is according to my information.

Q. And was it in good condition for public travel when those complaints came in?

A. No, of course, no complaints would have come in if it had been in good condition.

Q. Did you mean to say, then, that it has not been impassable prior to 1914?

A. Yes, sir.

Q. But you found it necessary to put in $300 upon it, and that included the cost of those culverts, didn't it?

A. Yes, sir.

Q. And there is no reason why those culverts cannot be made use of again in the repair of that road is there?

A. Well, if I was to exercise my judgment in the matter, I should never allow them to be put in, because they are inadequate, they would be too small. They would be of value to us to put
2950 in some other place.

Q. These flood waters waters didn't have the effect of destroying either steel or wood, did they Mr. Pinkney?

A. Why, of course the destruction of wood would be more rapid than it would on steel, but of course contact with water for a short time would not destroy either wood or steel.

Q. How much of the grade along that particular road was washed out in 1915 and 1916, what part of it?

A. The whole highway there, where we repaired it, and a considerable stretch on both sides of it was so far out — sight that no one explored it to find out how much had been destroyed.

Q. Have you examined it to see how much of the grade was destroyed?

A. I have been told that it was entirely destroyed.

Q. Have you examined it?

A. I have not been there at a time of the year when I could examine it carefully. I have been there in the winter time.

Q. How high was the grade along that road in 1914?

A. Do you refer to after we repaired it, or before?

Q. Before you repaired it.

A. Just the ordinary dirt grade on the ordinary highway.

Q. About how high?

A. Probably a foot and a half high.

Q. How high did you raise it?

A. Must have been raised a foot and a half more.

Q. A foot and a half more?

A. I suppose so.

Q. Do you know what these steel culverts cost that you put in there.

A. My recollection of them is that they cost at that time
2951 $2.78½ or $2.97½ a foot. Of course they cannot be bought for nearly double that now.

Q. How long were they?

A. I think they were 16 or 20 feet.

(A voice:) They cost about $85 for the two.

Mr. Palmer: That would leave $2.15 for the grading. You raised the grade along there a foot and a half and put in two culverts for $300?

A. Yes, sir.

Q. You think that to restore that grade to what it was in October 1914 would cost something like between $600 and $700 now?

A. To make it adequate to accommodate the travel it would cost more than that.

Q. I am asking you what it would cost to restore it to the condition that it was in the fall of 1914. Which I understood was what counsel for the complainant asked you? You estimated here $430 per mile average for the whole 17 miles. Is that one of the roads on which you have done no work?

A. No, sir, that is one of the roads on which we have done some work, but on which we will have to do much work before it will be passable.

Q. You think to restore that grade to the condition it was in in 1914 will cost about $600?

A. I think it will cost more than that.

Q. Well, about how much do you think it will cost to place it in the same condition it was in 1914?

A. I shouldn't wonder if it would cost $750 to $1,000.

Q. To put back there a mile and a half of dirt grade about three feet in height?

A. Yes, sir.

2952 Q. $750?

A. Yes, sir.

Q. About what width was the grade in the fall of 1914?

A. Well, after we repaired it of course we didn't make it very wide, we got through it as quick as possible, we didn't make it——

Q. What width did you make it?

A. I don't think it was over 10 feet wide.

Q. So, to make a grade for that mile and a half, 10 feet in width, and about three feet high, would cost, in your best judgment $750?

A. I haven't so stated, that was not in my mind, any such grade as 10 feet.

Q. I asked you what it would cost to restore it to the way it was in 1914?

A. That is your statement about what it was.

Q. My statement was that it was 10 feet in width.

A. Yes.

Q. What is your statement?

A. My statement is as to the small portion in which we repaired it, was probably 10 feet in width and we couldn't put in a mile and a half of road 10 feet wide. They would have us arrested, nobody could pass teams there.

Q. I want to know what you did in 1914 to the road, how wide a grade you made?

A. I think 10 feet wide a little stretch we repaired to enable people to get to town and to get back and forth to their homes.

Q. How much of a stretch did you repair in 1914?

A. I don't think there was over 25 to 40 rods, I am not sure.

2953 Q. 25 to 40 rods of that roadway was graded up 10 feet in width, a foot or a foot and a half in height?

A. Yes, sir.

Q. And these two culverts?
A. Yes, sir.
Q. And that cost $300?
A. Yes, sir.
Q. In the season of 1915?
A. 1914.
Q. Yes. What was the condition of the rest of the road, how high a grade was the rest of that mile and a half——
A. It was probably——
Q. A mile and half, that would be 240 rods, how many rods did you fix up?
A. 25 to 40, I may be mistaken about that. The township overseers' testimony would be more valuable as to the exact length of those repairs.
Q. We will say there is 200 rods remaining, how high was that grade?
A. Just about the height of the ordinary country road, a foot to a foot and a half high.
Q. From a foot to a foot and a half; what width was it?
A. They are usually about 25 to 28 or 32 feet.
Q. The grade was?
A. The grade on the country roads.
Q. The grade on that road?
A. I presume so, yes, sir.
Q. Did you see it, do you know?
A. I have seen it; I haven't taken measurements, but it appears to be about the width of the ordinary country road.
2954 Q. About how wide do you say?
A. From 25 to 30 feet.
Q. You say it is 25 feet wide and a foot and a half high?
A. At the crown, at the highest part of course.
Q. And from that point down, to perhaph almost nothing?
A. Yes, sir.
Q. Not a very good road, was it, the rest of it?
A. About the usual country highway.
Q. 200 rods of it then, the highest part, was graded up to a foot and a half, running from that down to nothing, and about 25 to 30 feet in width. All right. Was that foot or foot and a half, whatever it was, of grade, was that totally washed out and destroyed in 1915 and 1916?
A. I think it was.
Q. Do you know anything about it, have you seen it since?
A. Yes, sir, I have seen it since.
Q. Have you examined it?
A. Well, it was not a favorable time for examining it very accurately when I saw it.
Q. Didn't you go there at a favorable time for examining it accurately?
A. There has not been any time it could be examined until a few weeks this fall, since the flood waters came on.
Q. Before you undertook to testify here it was going to cost $750

to put that grade back there, wouldn't it have been a good plan for you to have looked at it to see what was necessary to be done there?

2955 A. We have repaired other roads, and I know what other roads of a similar character have cost, and I knew what the character of that road was; and therefore I think I was fairly competent to testify what the cost would be there.

Q. But so far as you can call to mind now, you have never examined any part of that road with the purpose of making an estimate as to the cost of its repair?

A. Our township overseer has examined it, and he has reported to me, and he is the person constituted by law to make such reports.

Q. Will you have the kindness to answer my question. Have you, since the flood of 1915 and 1916, examined this road with the purpose of figuring the cost of the restoration of it?

A. No, sir.

Q. If the road was in bad condition in the stretch of this 25 to 40 rods that you repaired, and in some places there was no grade and in others only a foot and a half the highest point, you think to restore it to that practically impassable condition, poor condition that it was in in 1914, and put back this foot and a half of grade that you put in, 25 to 40 rods would cost $750 do you?

A. Those details are what you are weaving in. My answer to your question would be it was in a broad general statement.

Q. Now have you figured, in other words, on the restoration of that road to the actual condition that it was in in 1914?

A. Yes, sir.

Q. Or have you figured on the expense of placing the road in good, passable, adequate condition for public travel?

A. That is just what it was in 1914, good, adequate, pass-

2956 able condition and to restore it to that same condition again would cost what I have stated, in my judgment and in the estimation of our township overseer of highways, who is by law constituted to take care of such things.

Q. All of it was in good, passable, adequate condition in 1914?

A. Fairly so.

Q. And you figured only to restore it to that condition it was then in, would cost $750?

A. Yes, sir.

Q. Have you had any road builder or contractor look at that road to make an estimate of what it would cost to restore it to what it was in 1914?

A. No, sir, the law does not provide for any such contractor or road builder.

Q. I didn't ask you whether you had had some contractor look at it with a view of putting it in, but with a view to estimating the cost of the repair. You have never seen it?

A. Oh, yes, I testified that I had seen it.

Q. Since the flood?

A. Yes, sir.

Q. With a view of estimating the probable cost of its restoration?
A. No, sir.
Q. Have you had any good road man to do that?
A. Yes, sir.
Q. Who?
A. Our township overseer of highways.
Q. What did he report as to the expense of restoring that road to the same condition it was in in 1914?
A. He said from $700 to $1,000.
2957 Q. Where is that report?
A. That report was delivered verbally.
Q. Where is that overseer of roads?
A. I presume he is at his home.
Q. Who is he?
A. Mr. William Stelton.
Q. Where does he live?
A. At the south end of Fairmount township, a mile from the state line.
Q. That is the way that he put it up to you, that to put that road back in the condition it was in 1914 would take $750?
A. Yes, sir.
Q. What do you think it would cost to get that road in proper condition for public travel, a good adequate roadway?
A. That is what I mean when I stated this condition.
Q. Now, the road between sections 28 and 27, 21 and 22, 16 and 15, there is three miles of road; in the spring of 1915, what condition was that road in?
A. Fairly passable condition.
Q. What time in the spring of 1915 did you pass over it?
A. I don't think I passed over it at all. Our township highway overseer passed over it, and he reported what he thought needed to be done.
Q. Did he report anything that he *through* needed to be done in the spring of 1915?
A. No, sir, he said there were a few places that needed a little repairing, a little patching up.
Q. How high a grade was there along that stretch of road?
2958 A. About like the other, about a foot to a foot and a half high.
Q. Has it any culverts or bridges?
A. I think there are two or three small culverts, no big bridges.
Q. What kind of culverts are they, wooden or steel?
A. I think they are wooden culverts.
Q. You think there are two or three in that three miles?
A. I think so.
Q. Have those been totally destroyed?
A. I think so, yes, sir.
Q. The water destroyed them?
A. Yes, sir.
Q. How long had they been in there?
A. I don't know.

Q. What condition were they in in the spring of 1915?

A. They were so as to accommodate the travel; no complaints about being out of commission.

Q. Do you know whether they were new or old?

A. I have no recollection now as to just when they were put in.

Q. They have not been put in since your incumbency in the office of chairman?

A. It is possible they may have been.

Q. Have you seen them since the flood?

A. I have been over the road.

Q. Have you seen these culverts?

A. I didn't take particular notice *on* them, because they are not easy to find, the earth has been flattened out, and the grade has filled in.

2959 Q. You say the road grade has been flattened?

A. Yes, sir.

Q. Was there some grade there?

A. Yes, sir, some grade then.

Q. How high is that grade now?

A. About a foot high.

Q. And is there nearly as much *as* grade as there was before?

A. Probably so on the north and south roads, they weren't affected as much as the east and west grades were.

Q. What is the width of that grade?

A. I should say somewhere from 22 to 30 feet.

Q. Was that road traveled prior to the summer of 1915?

A. Yes, sir.

Q. By whom?

A. By any one that wanted to, I suppose it was a public highway.

Q. Was it traveled by the public generally, that road?

A. Why, I suppose so, yes, sir.

Q. Do you know anything about that?

A. Why, I know it is a public highway, I know it has been traveled.

Q. As a matter of fact, Mr. Pinkney, that road was first graded there about 1913, wasn't it?

A. I think not.

Q. When was it graded?

A. I think it was graded before I knew anything about township matters?

Q. Had you ever put any money in there since you had been on the town board, on that three miles of road?

A. Small sums of money, I don't think there is a great

2960 deal of money put on that road.

Q. Do you know anything about the extent to which it has been used by the public?

A. No, I do not.

Q. You don't know when it was graded?

A. I am quite sure it was graded before I had anything to do with township matters.

Q. If it was graded before you had anything to do with township matters, then you don't know how much it cost to grade it, do you?

A. No, sir.

Q. Now, your best idea about that road on that three miles up past that Anderson farm and that Wheeler farm, has that been a road suitable for public travel generally?

A. Why, yes.

Q. And by automobiles?

A. Yes, sir, sure; before those wet years it was passable for any public conveyance.

Q. All the time up to 1915 that road was a good, passable well-traveled highway, was it?

A. Except as to the time of spring freshet in the spring of the year; I have no doubt it might have been impassable for short periods, as most of our highways have been.

Q. Those spring freshets, would they cover the road?

A. I presume they would.

Q. Did they do it any damage?

A. No, sir.

Q. It took the water of 1915 and 1916 to destroy them?

A. It dosen't make any difference what year it comes. Any water that will go back and forth across the grade after the frost is out is going to destroy the highway.

2961 Q. You never had water that would destroy it before?

A. We have never had any water across the highway like 1915 and 1916 and 1917 since I have been in the country.

Q. It didn't in 1908?

A. For a short time, it wasn't so extensive then.

Q. That didn't do any harm?

A. Yes, sir.

Q. To the road?

A. Yes, sir.

Q. What did it cost to restore it, cost $500 a mile?

A. I don't know that is before I had anything to do with public highways.

Q. You say the grade is about a foot high along that three miles, so far as you know, and the culverts are still in there. You think it would cost to restore that road to the condition it was in in the spring of 1915, somewhere between $1,200 and $1,500.

A. I don't think I have so stated.

Q. What do you think it would cost to restore it to the condition it was in in the spring of 1915?

A. Possibly $200 to $250 a mile. Naturally we wouldn't put as much work on a highway there where the travel would not be heavy as we would on a more travelled highway. That would be common sense, I think.

Q. You have figured in here some $300 a mile?

A. Yes, sir, on an average.

Q. On that road?

A. On an average. Some of the roads would have had much more than that, and some would have had less.

Q. Do you think that road would have had less?

A. Yes, sir.

2962 Q. Have you ever looked that road over with the purpose of estimating the expense of restoring it to the condition it was in in the spring of 1915?

A. Yes, sir.

Q. When?

A. This fall.

Q. What time?

A. I was over it some 6 or 8 weeks ago, and looked it over yesterday.

Q. Looked it over very carefully with that purpose in mind?

A. Yes, sir.

Q. Of getting it back to the condition it was in before the floods of 1915 and 1916?

A. Yes, sir.

Q. What conclusion did you come to as to the cost of putting it back where it was?

A. I think, as I have stated, that that is one of the roads that would average $300.

Q. What do you think about that, how much a mile?

A. I have stated we would undoubtedly put less expense on a road not so much travelled as a more travelled highway.

Q. I don't mean to build a railroad bridge, Mr. Pinkney, nor a state road, I mean to put that road back that three miles, in the condition it was in the spring of 1915. What do you think it would cost a mile?

A. I don't think it could be done for less than $150 a mile.

Q. That would contemplate doing what to it?

A. That would contemplate just getting the wild rubbish out of the road and getting the ditches cleared a little bit at the

2963 side, and raising the grade a little bit in the middle.

Q. Have you had any road man look at it, or contractor or road builder?

A. Yes, sir.

Q. Who was that?

A. Our township overseer of highways.

Q. Is he a contractor or road builder?

A. He appears to be he is giving the township very good satisfaction, appears to be a man of sound judgment.

Q. What is his estimate per mile of that three miles?

A. I have given it to you.

Q. What you have given then, is his rather than yours?

A. We talked it over together, and we have agreed that that is about what should be done.

Q. $150 a mile?

A. Yes, sir.

Q. That would not contemplate any culverts or bridges?

A. No, sir.

Q. That would be about 6 inches of grade?

A. No, it would be more than that at the crown of the grade.

Q. You say it is about a foot now, and it was about a foot and a half before, six inches of the grade?

A. You can't get out on a road and use a grader and make a finished job of it, and only make a raise of six inches. You can't get a road finished with six inches of grade.

Q. You are figuring on doing more than the mere restoration of it to the condition it was in the spring of 1915?

A. No, sir, not as concerns the passability of the road but to be put in the same condition of convenience to travel.

2964 Q. Tell me about the road that runs between Sections 28 and 33, and 29 and 32, what condition was that in in the spring of 1915, how much of a grade was there there?

A. It was a very good grade there.

Q. How wide?

A. About the usual width of country roads, some 25 or 30 feet.

Q. How high?

A. At least two feet and a half in some places, and in some places not more than a foot and a half: some places not more than a foot.

Q. Had you put any money on that road just prior to 1915?

A. Yes, sir, we put some money on it every year to keep it in repair.

Q. What repairs had been put on it?

A. The usual road grading.

Q. Were there bridges on that road?

A. Yes, sir.

Q. Where?

A. Bridge just west of the corner of 29, and 28, I think.

Q. What size bridge?

A. I think 24 or 28 foot bridge.

Q. What material?

A. Steel.

Q. Was it destroyed?

A. The bridge still remains there, the approaches were cut out.

Q. Was the bridge itself injured?

2965 A. The bridge itself was not injured, I believe.

Q. Then all that needs to be done there is to repair the approaches?

A. Yes, sir.

Q. What other bridges are there on that stretch of road?

A. A small culvert still further to the west, a wooden culvert.

Q. What size?

A. About 6 feet across, possibly 10.

Q. How long has it been in there?

A. I don't recall, I think that was, if my memory serves me right, that was put in when Mr. Weatherbee was chairman of the board.

Q. Was that destroyed?

A. Yes, sir, almost destroyed.

Q. How?

A. By the water undermining and tipping it over sideways, standing at all angles so it was impassable.

Q. It could be put back in the former condition and graded up to it?

A. No, sir.

Q. Why not?

A. You can best get your answer to that if you try the job.

Q. Will you answer the question?

A. I have answered it the best I am able. After those wooden culverts are undermined and get all twisted out of shape and the water has been over them, you couldn't attempt to level them up and straighten them up, they are generally ruined.

2966 Q. What part of that grade in there was destroyed in 1915 and 1916, on those two miles?

A. Part there, immediately east and west of the high bridge, and west of the little culvert or wooden bridge I have been speaking of, also across the intervening space between there, and Section — in Section 30 to the west.

Q. The entire grade wasn't washed out and destroyed?

A. So badly cut to pieces no one travels it, they go out in the fields now.

Q. What did you estimate as the cost of restoring this grade to the same condition it was in the spring of 1915?

A. Probably cost $300 a mile.

Q. That doesn't contemplate any bridges?

A. No, sir.

Q. Parts of that grade I apprehend are still there?

A. Yes, sir, there are a few undulations of the grade, high points where it doesn't need any grade.

Q. Take the road between 20 and 21 and 28 and 29. What shape was that in in the spring of 1915?

A. Fairly passable condition.

Q. Travelled by the public generally?

A. Yes, sir.

Q. Graded up?

A. Yes, sir.

Q. Bridges?

A. Yes, sir.

Q. How many?

A. I don't recall that there were any.

Q. Then there weren't any destroyed. How high was that grade?

A. Foot to a foot and a half, and some places where
2967 the higher ground was, there was no grade.

Q. Such as there was, was that destroyed?

A. Yes, sir.

Q. All gone?

A. It is destroyed so that the public refuses to travel on it, they can't travel on it.

Q. Have you done any work on that since it was destroyed?

A. No ,sir.

Q. What is your estimate of putting that grade back without any bridges on it, to restore it the way it was in 1915?

A. That came under our estimate of $300 a mile.

Q. The road between Sections 17 and 20?
A. That is an east and west road?
Q. Yes.
A. Yes, sir.
Q. What shape is that road in?
A. It is in very good shape now.
Q. When was it put in good shape?
A. We put close to $1,600 on it in the last two years, it ought to be in good shape.
Q. That is between 17 and 20?
A. Yes, sir.
Q. Have you done anything between 16 and 21?
A. Yes, sir.
Q. Is that road in pretty good shape?
A. No, sir, needs $1,000 more, I think, on that mile.
Q. To get it back where it was in the spring of 1915?
A. Yes, sir, so the public can travel it.
Q. Could the public travel in 1915?
A. Yes, sir.
2968 Q. Is there a bridge across the river at that point?
A. Yes, sir.
Q. Has it been travelled this past season?
A. I think it has a couple of months—they began travelling it the past three months.
Q. What do you think it would cost per mile to put it back in the shape it was before?
A. I should think it would cost $1,000.
Q. $1,000, that is for a mile?
A. Yes, sir.
Q. To just put it back where it was in the spring of 1915?
A. Yes, sir.
Q. How much of a grade was there there?
A. Two feet and a half high.
Q. What was it made of?
A. Dirt.
Q. How wide was it?
A. 25 to 35 feet.
Q. When was it put there?
A. I don't know, been there ever since I knew the country.
Q. That was entirely destroyed, washed away.
A. Most of it washed away.
Q. Two feet and a half of grade for that entire mile, a little over, was entirely washed away?
A. No, sir, not entirely but the most part of it.
Q. Where do these grades go to when they go that way, where do they disappear to?
A. I think that would be an engineer's question.
2969 Q. And you don't know anything about where they go to?
A. No, sir.
Q. They just go?

A. They just go.
Q. Between 17 and 20, how high were the grades there?
A. That was a good high grade, too.
Q. Was that totally destroyed?
A. Yes, sir.
Q. The whole mile gone?
A. Not entirely on the whole mile, about three quarters of it.
Q. Gone clear down to the ground, the original soil?
A. Yes, sir.
Q. Two feet and a half gone?
A. Would have gone off if we hadn't been working on it all the time.
Q. Did you work on it?
A. Yes, sir.
Q. When?
A. 1915 and 1916 and 1917.
Q. So that the grade there has remained about as it was?
A. I think so.
Q. That is what you have expended about how much on, you say?
A. Close to $1,600.
Q. Any bridges on that road?
A. Yes, sir.
Q. Were they destroyed?
A. The approaches were all cut out and the bridge was found to be badly inadequate, and we had to take it out and put in a large one.
2970 Q. You took out the old bridge and put in a large one?
A. Yes, sir, one of them.
Q. You don't figure that a damage.
A. Yes, sir.
Q. The rest of the way there, between 17 and 16, 8 and 9, and 5 and 4?
A. Yes, sir.
Q. How much of the grade was there there in the spring of 1915?
A. About the same as the others, a foot and a half or a foot high.
Q. About the same width?
A. Yes, sir.
Q. Bridges?
A. Yes, sir.
Q. How many?
A. Two or three.
Q. What material?
A. One steel bridge.
Q. Where was the steel bridge.
A. The steel bridge was somewhere, I think, east of the middle section of 17 and 16.
Q. Was that destroyed?
A. No, sir, the approaches were cut out.

Q. Was the grade there washed out and destroyed?
A. It was in bad shape so the public couldn't travel it.
Q. It wasn't travelled by the public, then, in 1916 at all?
A. No, sir.
Q. Nor 1917?
2971 A. It was travelled for a little while before the frost went out.
Q. Did you put any work on there before the spring of 1917?
A. Yes, we put some work on it.
Q. What part?
A. The entire mileage had some attention.
Q. Did you do some work there in 1916?
A. I think in the fall of 1916, if I remember right, they attempted to grade it, but found it too wet to do much to it.
Q. Was there any water on the west side of that road between sections 8 and 9 and 5 and 4?
A. No, sir, I think not. At what time?
Q. At any time?
A. Yes, I think at the south end of section 4 I think there was water.
Q. Those flood waters?
A. Yes, sir, I think so.
Q. There is a water way coming in from the west between sections 5 and 4 and across the road there, isn't there?
A. Yes, sir.
Q. Is that where the water came from that was on the west side of that road?
A. I believe that came from the waters that backed up from the river.
Q. Backed up that same waterway?
A. No, backed up from the river.
Q. What did it back through?
A. Backed up on the land, section 4.
2972 Q. Did it back up through this ravine, this waterway?
A. Backed up through that, and also the land outside of the ravine.
Q. What do you think was the cost of repairing that grade to the same condition it was in in the spring of 1915?
A. We have just repaired two miles of that, and it has cost us $300 a mile. That is where we get our estimate of the rest of it.
Q. I will not go over any more of the roads in detail. I take it, Mr. Pinkney, that for a year like 1916 you necessarily have to expend some money on the repair of the roads and bridges in your township?
A. There is always some expenditure every year for roads and bridges.
Q. Would there not naturally be a considerable increase in that expenditure in a year of the precipitation of 1916?
A. Undoubtedly we put in some larger culverts and larger bridges.
Q. And fixed up the grades?
A. Yes, sir.

Q. Now, isn't it true that there were hundreds probably thousands of bridges and culverts that were washed out all through this section of the country in the season of 1916?

A. Not to my knowledge.

Q. You don't know of any except in this township of Fairmount, Richland County, North Dakota?

A. No, sir.

Q. Take it over on the Rabbit River east of here. Weren't nearly all of the bridges washed out over there?

Mr. Pinkney: We object to that as incompetent and immaterial and not proper cross-examination.

2973

A. I am not familiar with the conditions over there.

Mr. Palmer:

Q. And take it west of here in North Dakota. Weren't there a great number of roads and bridges washed out there?

A. I am not familiar with conditions there.

Q. So far as your information goes, there were no roads or bridges destroyed by water anywhere in this vicinity except right in Fairmount township and by this water from the Bois de Sioux river?

Mr. Pinkney: We object to that as not the statement of the witness at all.

A. I haven't received any information from any definite source so that I could state definitely about affairs in townships other than our own.

Mr. Palmer: There was no other road grades in Fairmount township that needed any repair after the year 1916, except these that you have mentioned were there?

A. Yes, sir, we repaired them—we attempt and generally do repair all of our roads every year.

Q. And you have new bridges to put in here and there throughout the township from time to time.

A. Yes, sir.

Q. And culverts?

A. Yes, sir.

Q. And repairs to grades?

A. Yes, sir.

Q. You speak of one large steel bridge 116 feet wide across the Bois de Sioux river?

A. No, I think that is a wooden bridge.

2974

Q. Where was that?

A. Right out east of town.

Q. That was a wooden bridge?

A. Yes, sir.

Q. How long had it been in there?

A. It was in there when I came to the country, I think they claim it was put in there in 1900 or 1899.

Q. Was it all of wood, that bridge?

A. Yes, sir, it was a wooden bridge.
Q. Was that destroyed by those flood waters?
A. No, sir, the approaches were destroyed.
Q. Have you included the cost of replacing that bridge in this damage?
A. No, sir.
Q. That bridge is still there and in use?
A. No, sir, it has been removed and replaced by a steel bridge. By the two counties, counties of Richland and Wilkin, Minnesota, interstate bridge.
Q. You haven't figured the cost of the restoration of that as a part of this damage?
A. No, sir.
Q. Were there any of the bridges across the Bois de Sioux River that were destroyed?
A. No, sir.
Q. It was only the approaches to them?
A. Yes, sir.
Q. And I take it that in a year like 1916 the river would necessarily be higher, be at high water state, wouldn't it.
A. Yes, sir.
Q. Were these approaches to the bridges across the Bois de Sious River ever washed out before?
2975 A. No, sir.
Q. Ever since you have known it?
A. Ever since I have known it.
Q. Or injured or repaired in any way?
A. No, sir.
Q. The bridges always seem to be adequate to accommodate the flow of the water?
A. Yes, sir.
Q. At nearly all points where these grades were washed out, Mr. Pinkney, it was around the bridges that have been put across to accommodate the flow of water from the south through these various outlets of Traverse Lake, across this flat?
A. Oh, no, in many places the grade was washed out a mile back from the bridge.
Q. Well, was that by the wash of the water coming up from the south?
A. Yes, sir, it was; as I have stated, when the banks were just at a level of the grade, the waves would lap over it first from the north and then from the south, and wash the banks down, first one side and then the other, until the grade was destroyed.
Q. Does your township vote a certain sum for roads and bridge purposes each year at the town meetings?
A. I don't think it is usually specified, we vote a township levy, it is put up to the voters and recommended by the town board.
Q. You do not vote a road and bridge fund?
A. No, we vote on a general fund. The township board has discretionary power to expend that.
Q. You have no separate road and bridge fund?

A. No, sir, not in the township.

2976 Q. Now, do you have any vote upon the question as to the amount to be expended for road and bridge purposes?

A. Yes, sir, we have a recommendation from the town board usually as to their levy.

Q. How much of a levy was recommended for road and bridge purposes in your township in 1916?

A. $1,000.

Q. Was that upon the recommendation of the town board?

A. Yes, sir.

Q. How much of a road levy was recommended by your town board for your road and bridge purposes for the year 1917?

A. I believe $1,000.

Q. That was approved by the voters?

A. Yes, sir.

Redirect examination.

By Mr. Bronson:

Q. In addition to the recommendation of levies for the years 1916 and 1917, were other levies made for road purposes?

A. A mill tax is usually decided upon by the board, it was 5 mills for 1915 and 8 mills for 1916, and I am not sure whether it was 5 or 6 mills for 1917, I think it was five though.

Q. In addition to that, you may state whether or not you received the town received your proportionate share in the years 1915, 1916 and 1917 of the state automobile tax for license numbers on automobiles.

A. According to my understanding we have received none of that except in the year 1916, because the law requires every township to assess at least a 6-mill road tax to be entitled to participate in

2977 the automobile road fund.

Q. You received such money in 1916 for road purposes?

A. Yes, sir.

Recross-examination.

By Mr. Palmer:

Q. What revenue does this 5 mill tax yield?

A. I think somewhere about—the year that we levied the eight mill tax I think we raised about $5,200; with the $1,000 levy.

Q. What has been the customary amount of this mill tax for road and bridge purposes in your township?

A. 3 mills most of the time since I was on the board. For several years we made no special levy at all.

Q. Can you use that, under the law, for road and bridge purposes entirely?

A. I think so.

Q. Is that what it is for?

A. It is for general township purposes.

Q. You could use it, under the law, for road and bridge purposes if you see fit?

A. I think so.

Q. Have you a right to use it all for that purpose?

A. I think the law gives a board discretionary power to use the money wherever they see fit, except that we are limited as to the purchase of township property. We can't buy any kind of township property, that is, equipment, without consulting the voters.

Q. Is there any authority in the law of your state for the town board giving instructions to the assessor as to what valuation to fix upon property for taxation purposes?

A. I don't know.

2978 WALLACE J. TAYLOR, being recalled in behalf of complainant, testified as follows:

Examined by Mr. Bronson:

Q. You may state, Mr. Taylor, whether you heard the testimony of Mr. Pinkney concerning this road grade, and the work done on it in the year 1914, down near the state line?

A. I heard the testimony, yes, sir.

Q. Were you at that time road commissioner?

A. I was.

Q. Can you tell what the condition was there as to the shape the grade was in, what was done on it, what had to be done to restore it, and the work that had to be done to restore it?

A. Well, I think the fore part of October the board of supervisors ordered me to go and fix the road. I went down and found the water had washed out the grade, water coming up from the south had washed the grade, and we had to go to work and restore the grade; went to White Rock and purchased the culverts, hauled them up there and put them in. The culverts were 48" in diameter. The water was coming up from the south, and forcing its way over, running through Mr. Baker's pasture. I think this man Bruns that was on the stand in the forenoon made the complaint that he couldn't get to town without going a roundabout way, the grade was cut out, and the water running through for a distance on each side of the road. The water extended at least 10 rods long, and I don't know but what some places 10 to 20 rods. To fill it in we had to haul the dirt from each end and had to do that with wheeled scrappers costing much more. Mr. Pinkney's testimony with regard to 10 feet wide is wrong. This grade was built as wide as the grade.

2979 We hauled some rocks in there and put them around the culverts, and kept them from washing out in high water.

Q. The grade was about how wide?

A. About 16 feet side, just about the length the culverts was put in.

Q. Therefore, after the flood conditions of 1915 and 1916 occurred, that would be your opinion of the cost of restoring that grade?

A. It would cost a lot of money, for the further reason you got to get this dirt from any dry soil country and move it in. It is pretty

hard to estimate just what it would cost. I haven't seen the grade lately, but from Mr. Pinkney's description of it he didn't think that grade could be repaired for $1,000 a mile. I think that one place would cost $1,000 at the present prices to repair.

Cross-examination.

By Mr. Palmer:

Q. That would be to put it back where it was?
A. To put that 40 rods of grade back, that is all. I think it cost me over $300 at the time, and the condition, I am satisfied is much worse now than when I went down there.
Q. Do I understand you to state that you have seen the grade?
A. I haven't seen the grade no, sir.

2980 WILLIAM DAHLQUIST, being sworn in behalf of complainant testified as follows:

Examined by Mr. Bronson:

Q. State your age, residence and business?
A. 41 years old, cashier of the First National Bank of Fairmount, North Dakota.
Q. How long have you been cashier of the First National Bank of Fairmount?
A. Approximately 7 years.
Q. You may state whether or not the First National Bank of Fairmount was, in the year 1915, the owner of the east half of section 20, township 129 range 47?
A. Yes, sir.
Q. And whether in the spring of 1915 this land was sold to D. B. Martin for $65 per acre?
A. Yes, sir.
Q. You may state whether or not said sale included the crop of that year?
A. It did.
Q. You may state whether at the time you sold it to Mr. Martin the land had been all broken up?
A. It had, it was all broken up and cropped.
Q. State the character of that land?
A. There is a ridge in the center running north and south, with a draw on the west side, and also low land on the east side.
Q. What kind of soil?
A. It is black loam, the best Red River Valley loam.

Q. Is this land situated in what is termed the Red River
2981 Valley?
A. It is.
Q. Were these lands subjected to the flood conditions of 1915?
A. They were, yes, sir.
Q. There are about 317 acres in this land?
A. 314.51 acres.

Q. Were crops on that land impaired and destroyed in the year 1915 by these flood conditions?
A. Yes, sir.

Mr. Palmer:

Q. Did you see the crop in 1915?
A. I did.
Q. In the spring?
A. Yes, sir.
Q. And later in the fall?
A. Yes, sir.
Q. At different times?
A. At all times.

Mr. Bronson:

Q. What was the condition and promise of the crops on these lands at the time the flood conditions occurred, immediately prior to the impairment or destruction of the same?
A. To my judgment considered very good.
Q. Was it into wheat and oats and corn?
A. Yes, sir.
Q. Some pasture on it?
A. Yes, sir.
Q. What condition was the wheat and the oats?
A. Oats and wheat had a very good stand with a promise of a fine crop.
2982 Q. How was the corn?
A. Corn wasn't up at that time in the spring of the year and I couldn't state exactly its condition, it didn't have a chance to mature.
Q. Was the corn drowned out by the flood condition?
A. Yes, sir.
Q. Corn was planted?
A. Yes, sir.
Q. Did it come up?
A. Yes, sir; part of it got too sour and didn't come up.
Q. How many acres have you got figured that were flooded that year?
A. 20 acres of pasture, on the east side, on the extreme northeast corner, of the land right near the elevators there and fifty-five acres of wheat and about 55 acres of oats and forty acres of corn.
Q. And this was the land that was flooded?
A. Yes, sir.
Q. And have you computed the value of the crops so growing and and so destroyed by these flood conditions of the year 1915?
A. I have tried to do my best. Of course, there is some variation but I have taken out a fair estimate on what I considered would be a fair adjustment on the crop.
Q. For the year 1915?
A. For the year 1915, yes, sir.

Q. What computation have you arrived at and made for the value of these crops so destroyed by this flood condition at the time they were destroyed in the year 1915?

2983 A. I figured the pasture 20 acres of pasture at $1.50 where it was from a foot to two inches of water over it, $30.00. Approximately 55 acres of wheat, figuring the loss on it at $915; 55 acres of oats figuring the loss on that about $1,070.50, and the corn, about $300 of corn.

Q. That would be apparently at the rate of $7.50 an acre?

A. Yes, sir.

Q. Which would make a total value for the year 1915 of how much?

A. $2,315.50.

Q. Was that the net?

A. Yes, sir.

Q. Were those land- cultivated or cropped in the year 1915?

A. They were attempted to be, yes, sir.

Q. In what shape or form?

A. They made a desperate attempt to get out and put the crop in and they got some of it in but the horses had to wade in mud clear up to their knees and consequently couldn't do very much with it.

Q. Any crop raised or produced that year?

A. The crop that was raised and produced wasn't of any material value. We didn't get our seed back, it was practically a loss.

Q. Practically an entire loss?

A. Yes, sir.

Q. In other words, the use of the premises for the year 1916 on account of said flood conditions of 1916 were a loss?

2984 A. I don't know. I wouldn't say on account of the flood conditions but I would state that the flood of 1915 did sour the land for a long time and in 1916 it was impossible for us to get in there, we couldn't take care of the lands in 1916. If we hadn't had the flood of 1915 thrown in on us I am quite sure we could have put some of that field in and could have farmed our land but way the conditions were——

Q. You had flood conditions in 1916?

A. I suppose it had a tendency to follow up 1915, continue it.

Q. What was the fair rental value of these premises for the year 1916 as they would have been except for these flood conditions?

A. I have figured a fair estimate on that, $4 an acre, approximately $1,268.

Q. What shape were the lands in in 1917?

A. They were about the same. There wasn't much changed we haven't realized anything from it practically. I figured our damage still under those conditions was practically the same because the spring of 1917 it was impossible *to* us to get very much of the land cultivated, put in crop?

Q. So the fair rental value for these premises for 1917 as they would have been except for the flood conditions was likewise $4 an acre?

A. Yes, sir, I figure that.

Q. $1,268?
A. $1,268, yes, sir.
Q. Did you see a growth of cat-tails on these premises?
A. Yes, sir, very much, in fact, the east side was practically all cat-tails.
2985 Q. And would it cost something to restore these lands to to their former state of cultivation and tillability?
A. It has cost considerable already.
Q. What is in your opinion the cost per acre of restoring these lands so flooded in the years 1915 and 1916 to their former condition?
A. I am not very much of a judge on what it would cast. I am not a farmer and not posted on those things.
Q. You know it would cost something?
A. Yes, sir, it would.
Q. It has been testified by some of the witnesses it would cost on some of those lands flooded in 1915 and 1916, to restore them to their former condition of cultivation about $5.00 an acre, would that be excessive in your opinion?

(NOTE: Testimony continued on page 2901, through inadvertence the page immediately following was numbered 2901 instead of 2900.)

A. I wouldn't dare to say either way, I couldn't tell, it is out of my line. I wouldn't know how much work there had to be done on it. I do know that the ground was baking, and had to do a lot of discing and dragging in order to get it worked up.
Q. You do know it was grown up to these cat-tail growths?
A. Yes, sir.
Q. When did Mr. Martin go on the premises?
A. Fall of 1915.
Q. Was he on there in 1916?
A. Yes, sir.
2986 Q. What improvements are there on these premises?
A. There is a good house and a nice large barn, windmill and stone house at the wind-mill and nice large machine shed, southwater well, and a granary.
Q. Any fences?
A. Yes, sir, it is three-quarters fenced all around on the 314 acres.
Q. Is Mr. Martin here now?
A. No, sir.
Q. What did Mr. Martin do with this land?
A. He done the best he could trying to farm it.
Q. Is the First National Bank now the owner of this land?
A. They are.
Q. How did they come into possession of it again?
A. He deeded it back to us.
Q. This year?
A. Yes, sir.

Q. He was unable to farm it?
A. No, sir.

Cross-examination.

By Mr. Palmer:

Q. When did the First National Bank of Fairmount get this land?
A. It was August 30, 1913.
Q. Whom did they get it from?
A. Bought it in from Mr. Blackmen the owner of the premises at the time.
Q. Fall of 1913?
A. Yes, sir.
2987 Q. What did the Bank pay Mr. Blackmer for it?
A. Approximately $55 an acre.
Q. What do you mean approximately?
A. It might have varied 50 cents, or something like that. It was about $55 an acre.
Q. Did the bank pay cash for it?
A. Paid cash for the balance, and assumed a mortgage against it.
Q. How many mortgages were against it?
A. One mortgage.
Q. How much?
A. $5,000.
Q. Whom did that belong to?
A. The Union Central Life Insurance.
Q. When was that loan made?
A. I couldn't tell you, I haven't the records here.
Q. Was the loan made by the Bank?
A. It was made to the bank, I suppose, it was before my time.
Q. That was a loan to the Union Central Life Insurance Company?
A. Yes, sir.
Q. $5,000 on this land?
A. Yes, sir.
Q. Which has been paid to the bank?
A. Yes, sir.
Q. And the bank took the land over from Blackmer and assumed this mortgage?
A. Yes, sir.
Q. How much money did they pay Blackmer?
2988 A. They foreclosed a mortgage of approximately $8,000 and interest. The year of redemption was up August 30, 1915, and we bought in the mortgage.
Q. That was a mortgage of $8,000 you say?
A. Yes, sir.
Q. Whom did that run to?
A. That was $5,000.
Q. I thought you said it was $8,000?
A. $5,000 and interest.

Q. Was yours the same size? $5,000?
A. No, sir, that was the second mortgage.
Q. There was a second mortgage in addition to the first mortgage to the Union Central?
A. There was.
Q. And the second mortgage was $5,000 on the land?
A. Yes, sir.
Q. And the accumulated interest on it brings it up to $8,000?
A. No, sir.
Q. You said something about $8,000?.
A. That was another deal, we had a third mortgage on the farm, the First National Bank. We had to jump in there to protect our own interests.
Q. Blackmer put these mortgages on?
A. Yes, sir, he did.
Q. How long had Blackmer owned it?
A. I guess he homesteaded it.
Q. He got it for nothing, and then he got busy with mortgages, he had a $5,000 first mortgage to the Union Central then he had $5,000 second mortgage to whom?
2989 A. To Schouweiler, it was either this Schouweiler here or his brother, I don't recollect which, but I think his brother.
Q. And then he had a third mortgage to your bank?
A. Yes, sir.
Q. He was some busy man, wasn't he? Did he have any more mortgages on there?
A. Not as I know of.
Q. You say the bank got it by reason of the second mortgage to Schouweiler having foreclosed?
A. Yes, sir.
Q. To protect your third mortgage interest your bank stepped in and made a redemption from the second mortgage foreclosure on the last day of redemption?
A. Yes, sir.
Q. What was the matter with Mr. Blackmer here why didn't he take care of these mortgages?
A. Same as a whole lot of them, I suppose he couldn't do it.
Q. Had he been getting any of this $4 an acre rent money for the overflow land?
A. He lived on it himself, I don't know as he could figure the value on it.
Q. He lived on it himself?
A. Yes, sir.
Q. When you stepped in and made this redemption, or the bank did, did they pay Mr. Blackmer any money?
A. Yes, sir.
Q. How much?
A. About $4,000?
Q. Cash, was that?
A. Yes, sir.

2990 Q. Or was it in the shape of claims against him?
A. Well, part claims notes that he owed the bank and the balance in cash.
Q. Well, how much was it in the form of notes that he owed the bank?
A. I couldn't tell you.
Q. Half of this $4,000?
A. Well, no, not quite.
Q. Was some more of it in claims of various men against him?
A. Not necessarily.
Q. How much actual cash did the bank pay Mr. Blackmer for that land?
A. I don't recollect.
Q. Did they pay him as much as $2,000?
A. Yes, sir, we did.
Q. Where did he go?
A. Claimed to go to Krutz, Alberta, Canada.
Q. When did he homestead it, do you know?
A. I don't know that was before my time.
Q. About 1891, from the record, it appears?
A. No.
Q. It was before that—1884; well, he had been there according to your information something like since 1884?
A. I should judge, I don't know, I wasn't here.
Q. Is that the gentleman whom Blackmer station was named after?
A. I couldn't tell you that.
Q. Blackmer station is right, just across the line almost upon this land, isn't it?
A. Yes, sir.

2991 A. Yes, sir, it cuts off seven acres from his line.
Q. This town of Blackmer?
A. Yes, sir.
Q. He got the land as a homestead, and by 1913 he succeeded in getting $13,000 in mortgages against it, and about $2,000 indebtedness to your bank; that is your best information about it?
A. Yes, sir.
Q. Now how many bushels per acre did you figure this wheat that was on there in 1915?
A. I didn't figure out exactly the number of acres, I figured that 55 acres would sustain a loss of $915.
Q. Did you figure the number of bushels per acre?
A. I think I did, I left my figuring slip at the bank.
Q. Do you know about how much you figured that?
A. Not exactly.
Q. About 20 bushels?
A. Approximately 20 bushels to the acre.
Q. Had Blackmer been raising these big bumber crops of wheat on the land, 20 bushels to the acre?
A. I don't know, I couldn't tell you that.
Q. You don't know whether he ever raised any wheat on there?

A. I know the fall of 1913, when he took it, we got 22 bushels on part of it that was in crop.

Q. How big a part was it?

A. About 15 acres.

Q. Who had put that crop in?

A. A fellow by the name of Jenson.

Q. What had become of Blackmer?

2992 A. He was up in Canada, taking care of the interests there. He had not been farming the land for a year or two past before we got it.

Q. He quit about 1911 or 1912?

A. I couldn't tell you.

Q. He quit before the big crop came?

A. Not necessarily. I understood that he used to raise some good crops there.

Q. How many bushels to the acre did you figure the oats? You got figures of about $20 an acre net?

A. I thought I had put that at $18.50, $1,070.50.

Q. How many bushels per acre did you figure that, about 15 bushels was it?

A. Figured out about 40 bushels to the acre.

Q. Did Blackmer ever raise 40 bushels to the acre?

A. I don't know, I wasn't here at the time.

Q. You figured this corn worth how much an acre before it came up?

A. About $7.50.

Q. $7.50 an acre for the corn?

A. Yes, sir.

Q. Do I understand you to say that part of it didn't come up?

A. Yes, sir the flood came in there.

Q. What time did the flood come in there?

A. I don't know, it started to come in soon after he got it planted.

Q. What time was that, when did he get it planted?

2993 A. I don't know, I couldn't tell you, the regular time of planting corn there.

Q. I think the usual time of planting corn is from the 10th to the 20th of May, so it was about the 1st of June that the flood hit this land?

A. Some time in June.

Q. Some of the corn hadn't come up yet?

A. Yes, sir, it was up.

Q. All up?

A. I didn't go over the field, I just saw it on the road.

Q. You think to put that corn on the market at that time it would have sold for $7.50 an acre?

A. I don't know, I couldn't tell you whether it would or not.

Q. What do you think it would have sold for?

A. I know what it would have sold for if it would go to maturity.

Q. I am not asking you about that, I am asking you what it could have been sold for on the market at the time the flood hit it.

A. I don't know.

Q. Why did you say $7.50 an acre, if you don't know?

A. That is what we got the year before off it, it was worth $7.50 an acre to us.

Q. Matured corn was worth $7.50 an acre?

A. Yes, sir.

Q. Corn that was barely above the ground in the month of June was not worth $7.50 in the field on the market.

A. We considered it so.

2994 Q. If it had matured and made corn?

A. Nothing to hinder it to get matured except the water that came in.

Q. I am asking you about the fair market value of that corn as it stood in the field at the time the water came onto it. Do you know anything about it?

A. I don't know as anybody has ever sold any corn under those conditions.

Q. I am asking you about the fair market value per acre of that wheat as it stood in the field at the time this water came. What was it?

A. The same as the corn. We figured that when the crop matured it is worth so much.

Q. I am not asking you about when the crop matures. I am asking you how much that wheat was worth in the field at the time the water came on.

Mr. Pinkney: That is objected to, as it is evident that the wheat wasn't worth anything at the time that the flood came on. The question is, how much it would be worth without it.

A. I never heard of anybody selling grain standing in the field.

Mr. Palmer:

Q. You never heard of them marketing any oats standing on the field?

A. No, sir, not necessarily.

Q. You don't know anyway about the fair market value of that corn as it stood on the field at the time the water came onto it?

A. Not very much of a judge, of it, no, sir.

Q. What kind of a corn year was the year 1916 in this section?

A. Not very good.

2995 Q. Did you know of any land that was rented around here in 1916 such land as this of yours, had it been dry at $4 an acre cash rent?

A. Well, I don't know as I do.

Q. What is the going cash rent of such farms as that?

A. Well, approximately, I should judge, $3.00; some rented here for $4.00 but that was something new to us, we had never had any cash rent before.

Q. That was for well improved farms?

A. Yes, sir.

Q. You don't maintain this was a particularly well improved farm?

A. Yes, sir, it is.

Q. And it is good, high, dry, tillable land?

A. It is, yes, sir.

Q. Do you know any reason why Mr. Blackmer couldn't have raised good crops there each year that he lived there?

A. No, I don't know any reason.

Q. Do you know any reason for his having taken that land on a homestead, got it for nothing and by 1913 accumulated $15,000 in debts?

A. Yes, sir, I do. He bought Canadian land, ranch land with that money.

Q. Do you know anything about his crops that he raised on this land?

A. No, sir, I don't.

Q. What time in 1915, did you sell it to Martin?

A. In the spring of 1915.

Q. In the spring of 1915 you sold it to Martin with these crops on it for $65.00 an acre?

2996 A. Yes, sir.

Q. How much did he pay down?

A. Approximately $5,500.

Q. In what?

A. That was in notes assigned by the Cartersville Irrigated Land Company.

Q. Pretty well irrigated, the notes?

A. No, sir, notes considered good.

Q. How much do you say he paid down including these notes?

A. $5,500.

Q. How much of it was represented by these notes?

A. It was all notes.

Q. All notes of this land company?

A. Yes, sir, but $500 and interest was collected later on and which we received, making it about $800 in cash we received.

Q. That was what you collected on those notes?

A. Yes, sir.

Q. Have you ever collected the balance of those notes?

A. No, sir, we have them in a judgment.

Q. When did you reduce it to a judgment?

A. This spring, 1917?

Q. Have you ever been able to collect the judgment?

A. We haven't forced it yet.

Q. Where is this concern located?

A. They have their office in Aberdeen.

Q. Is this judgment collectable?

A. They claim it is, yes, sir.

Q. Who said that?

A. All the banks in Aberdeen.

2997 Q. Why didn't you collect it then?

A. We haven't had time.

Q. Now, Martin paid you $5,500 in notes, he didn't pay any money at all?

A. No, sir.
Q. What did he do about the rest of it?
A. There was some under a contract to pay $1,000 a year and interest.
Q. What rate of interest?
A. Six per cent.
Q. And $1,000 a year?
A. Yes, sir.
Q. That would run how many years?
A. Well, it was agreed that as soon as that was cut down to $10,000 we would give him a deed and take a mortgage for the balance.
Q. That included the crop of 1915?
A. Yes, sir.
Q. Martin stayed there until 1915?
A. Yes, sir.
Q. Martin stayed there until what time?
A. This year, about a month ago.
Q. Where did he go then?
A. Went to Blandersville, Illinois.
Q. He gave up this land?
A. Yes, sir.
Q. And lost his $5,500 in notes?
A. Yes, sir.
Q. And did he deed the land over to the bank?
A. Yes, sir.
2998 Q. This crop of 1915 would belong to him and not the bank?
A. Yes, sir.
Q. And the rental of 1916 would belong to the bank?
A. I suppose it would belong to Martin under the contract.
Q. The rental of 1917, that belongs to Martin too?
A. Yes, sir.
Q. So your bank has no interest in these damages you have spoken of here, Mr. Dahlquist?
A. No, sir.
Q. How much of that land was under cultivation when you got it, when your bank got it?
A. About 200 acres, or such a matter.
Q. What was the balance of it?
A. Balance was into pasture and grove and fruit trees.
Q. Some of it in swamp?
A. No, sir.
Q. Did you at the time you acquired this land examine it as to whether it was subject to overflow?
A. Yes, sir, we did.
Q. There is a ravine or draw that runs across the northwest corner coming up from forming the west outlet of Traverse Lake isn't there?
A. Yes, sir.

2999 (At this time a recess was taken until November 15, 1917, at 9:15 o'clock A. M.)

November 15, 1917, at 9.15 a. m.

JAMES A. WESTERMAN sworn in behalf of complainant, testified as follows.

Examined by Mr. Pinkney:

Q. Where do you live?
A. Capron, Illinois.
Q. State you- age?
A. 42.
Q. Do you own any farm lands in Fairmount township, Richland County, North Dakota?
A. Yes, sir.
Q. Will you describe the lands?
A. East half of section 21, Township 129, Range 47, Richland County.
Q. How long have you owned the land?
A. I have owned part of it 5 years and part of it 6 years.
Q. How many acres are there in that tract?
A. 320 acres.
Q. Since you have owned it, what have you been doing with it?
A. I have been cropping the land.
Q. Raising different kinds of crops?
A. Yes, sir.
3000 Q. Have you raised different kinds of crops year after year from the time you owned it up until 1915?
A. Yes, sir.
Q. Every year?
A. Yes, sir, every year.
Q. On both quarters or the whole half section?
A. Not every year since I have owned it.
Q. I mean up to 1915?
A. Yes, sir.
Q. On both pieces?
A. Yes, sir.
Q. Were your lands or any of your lands affected by those flood waters that are alleged to have overflowed some lands in this vicinity in the year 1915?
A. Yes, sir.
Q. How many acres of your land was flooded in 1915?
A. It was all flooded.
Q. That is, the whole 320 acres?
A. Yes, sir.
Q. At the time your land was flooded in 1915 was there any crops of any character growing upon it at that time?
A. Yes, sir.
Q. Will you tell the court what the crops were that were growing on the land at the time the flood waters came upon it?

Mr. Palmer: Just a question for the purpose of laying a foundation for an objection.

Q. Did you farm this land yourself?
A. No, sir.
Q. Or see this crop of 1915?
3001 A. I saw it after it was flooded.
Q. Did you see it prior to the time it was flooded?
A. No, sir.
Q. And all you know as to its condition prior to the time it was flooded is what someone has told you.
A. Is what my man told me, my man working for me, yes sir.
Q. That is all you know about it?
A. I didn't see it, no, sir.

Mr. Palmer: Objected to as incompetent, immaterial and irrelevant, witness not shown himself competent to testify.

Mr. Pinkney:

Q. You saw the crops on your land after the flood waters came on it?
A. Yes, sir.
Q. Then you did see the crops standing on the land?
A. Yes.
Q. Go on and tell the court what crops you had in that season that you saw standing there in the flood waters?
A. 50 acres of wheat, 50 acres of barley, 10 acres of rye, 160 acres of oats, balance pasture, 40 acres, 10 acres of hay land.
Q. That is the entire half section?
A. Yes, sir.
Q. Those are the crops that were growing on the land when you saw it after the flood waters came on?
A. Yes, sir.
Q. Did you harvest any of those crops that year?
A. No, sir.
Q. Why not?
A. It was covered with water, couldn't get them.
3002 Q. Were the crops destroyed standing in the fields that year, these crops that you have mentioned?
A. Yes, sir.
Q. Did you harvest any crops—do you know what the wheat in the vicinity of this piece of land averaged that year, that is, on lands that were not flooded or affected by flood waters, the average yield per acre?
A. About 20 bushels.
Q. Have you computed what the value of this 50 acres of wheat was as it stood on the land there at the time the flood waters came upon it?

Mr. Palmer: Objected to as the witness has not shown himself competent to testify, not the proper measure of damages, incompetent, immaterial and irrelevant.

A. Yes.

Mr. Pinkney:

Q. You may state what that value was as computed by you?

Mr. Palmer: Same objection.

Q. 50 acres of wheat at 20 bushels, gross $950.

Mr. Pinkney:

Q. Is that the gross amount or net amount?
A. Yes, sir, gross amount.
Q. I want you to give the net amount?
A. Net amount would be $847.50.
Q. Take your fifty acres of barley and tell the court what the value of that was as it stood upon the land prior to the time the flood waters came upon them?
A. Net value of 50 acres of barley, I figured it $920, net value.
Q. Take the 10 acres of rye, what did you figure the net value of that as it stood upon the land there at the time it was destroyed by the flood waters?
3003 A. $188.50.
Q. Next take your 160 acres of oats, tell us what the net value of that crop was at that time?
A. The net value I figured at $2,456.
Q. You- 40 acres of pasture, what was the net value of that crop?
A. I figured $3.00 an acre, $120.
Q. Next 10 acres of hay?
A. I figured it at the same price, $3.00—$30.00.
Q. Making a total of how much, Mr. Westerman?
A. $4,562.
Q. Now, Mr. Westerman, in arriving at those net values that you have given, you may state to the court whether or not you have deducted from the figures given in each instance the expense of harvesting and threshing and marketing these cereal crops?
A. Yes, sir, I have.
Q. And you may state whether or not you have computed these valuations and amounts upon the yield per acre in each case as you found it to be on lands in your vicinity that were not affected by those flood waters?
A. Yes, sir, I have.
Q. You may tell the court whether these lands were flooded in the year 1916?
A. Yes, sir, they were.
Q. To what extent?
A. They were totally covered with water.
Q. Did you produce any crop on them that year?
A. No, sir.
Q. Why not?
3004 They were covered with water.
Q. The entire half section?
A. Yes, sir.

Q. Have you computed the rental value of the half section of land to you for the year 1916?

A. Yes, sir.

Q. You may tell the court what you computed its rental value to be for that year?

Mr. Palmer: Objected to as not the proper measure of damages.

A. The total amount for the year $1,624.70.

Mr. Pinkney: As I understand you, you produced nothing whatever on that half section that year on account of these flood waters covering it, that is true?

A. Yes, sir.

Q. Did you produce any crops on that piece of land during the year 1917?

A. No, sir.

Q. Why not?

A. They were flooded again that spring.

Q. Flooded in the spring; what do you mean by that, too wet to farm?

A. Too wet to farm, yes, sir.

Q. Did you compute what the rental value would be of those lands in the year 1917?

A. Yes, sir.

Q. Tell the court what the amount is.

A. I have computed the value at $2,932.50.

Q. You may tell the court in what manner you computed the rental values for each of the years 1916 and 1917, to arrive
3005 at the net value, take the year 1916.

A. Based on the crops that were raised in the vicinity by others that were not flooded.

Q. That is, on the yield, you mean?

A. Yes, sir.

Q. What kind of crops did you figure having on the land?

A. Well, comparatively the same, year after year.

Q. Comparatively the same as you had in 1915?

A. Yes, in 1915.

Q. And how with respect to the year 1917, what crops did you figure as being on there?

A. Comparatively the same as I would other years.

Q. Is that about the manner in which the farm has been cropped since you owned it, year after year?

A. Yes, sir.

Q. What prices for the grain produced did you adopt?

A. The market price.

Q. For each year?

A. Yes, sir.

Q. The market price at what point?

A. The nearest——

Q. At the place where you market your crop?

A. Yes, sir.

Q. Where is it?

A. Generally Blackmer.
Q. That is Richland County, North Dakota?
A. Yes, sir.
Q. How far is that from these lands?
A. About half a mile.

3006 Mr. Palmer: We move that the testimony as to rental values as to 1916 and 1917 be stricken *p*ut as not the proper measure of damages shown by the witness's own testimony.

Mr. Pinkney:

Q. In computing these values for the years 1916 and 1917, did you compute them on the croppers' rental value plan?
A. Yes, sir.
Q. That is to say, on the terms at which lands are generally rented on the crop plan in that vicinity?
A. Yes, sir.
Q. One half to the tenant and one half to the owner, is that the method you adopted?
A. Well, I have here——
Q. Just answer the question; is that the method you adopted in reaching these figures?
A. Yes, sir.
Q. You hired the work done by hired help?
A. Yes, sir.
Q. But this computation is based on the croppers' plan method, is it?
A. Yes, sir.

Mr. Bronson:

Q. You know what we mean by croppers' plan method, the usual method on the one half basis?
A. Yes, sir.
Q. That has been referred to in the testimony heretofore as the croppers' plan method of farming lands in this vicinity you are familiar with that, are you?
A. Yes, sir.

Mr. Pinkney:

Q. As I understand you, these rental values given for the year 1916, you computed that on the basis of that being the rental
3007 value of the lands had they not been flooded in the years 1916 and 1917?
A. Yes, sir.
Q. Mr. Westerman, what shape were those lands in as left by these flood waters— the flood waters have now receded, gone off?
A. Yes, sir.
Q. What shape were the lands in; was there any growth on them of any kind?

A. Yes, sir.
Q. What was it?
A. Well, there was rushes and cat-tails.
Q. To what extent did they cover them?
A. Nearly covered.
Q. The entire farm?
A. Nearly did, yes, sir.
Q. What is the approximate extent of the growth, that is, are they little bits of things down next to the ground or 15 feet high, tell the court?
A. They are so high, I can't see over them. The land was in that condition last fall, I haven't seen it this fall.
Q. You mean a few months ago?
A. I mean a year ago this fall; fall of 1916.
Q. Did these flood waters that were on those lands in the years 1915, 1916 and 1917 damage them to any extent aside from the crop features, did it damage the land?
A. Yes, sir, they washed the land.
Q. Have you seen this land this fall?
A. No, sir, I have not.
Q. So you don't really know the exact condition they are in this fall?
3008 A. No, sir.

Cross-examination.

By Mr. Palmer:

Q. The northeast quarter of section 21, 129, 47 you appear from the record to have acquired in 1914; your deed appears to be dated the 28th day of August, 1914?
A. Yes, sir.
Q. Was that when you got the land?
A. It wasn't when I came in possession of it, no, sir.
Q. When did you come in possession of it, what year?
A. I believe in the year 1913.
Q. What part of 1913?
A. I am unable to say exactly, a contract for the deed.
Q. Was it in the spring or in the fall?
A. I am unable to say exactly, I haven't the record with me.
Q. Surely you must know whether you acquired this land in the spring of 1913 or the fall of 1913, Mr. Westerman?
A. I can't give the date, no, sir.
Q. Spring or fall?
A. I can't give that, whether it was spring or fall, I can't say.
Q. Did you have the crop of 1913 on the northeast quarter of section 21?
A. No, sir.
Q. Then you must have acquired it after the cropping season of 1913?
A. I think so.

3009 Q. Then the only year that you cropped this land prior to 1915 was the year 1914?

A. The northeast quarter, yes, sir.

Q. Now, what did you mean when you said in your direct examination that you had had this land 5 or 6 years and cropped it every year?

A. I was referring to the south quarter.

Mr. Pinkney:

Q. Southeast quarter, you mean?

A. Southeast quarter, yes, sir.

Mr. Palmer:

Q. You answered as to the entire tract, that you had part of it 5 years and part of it 6 years. Why did you make that statement?

A. I thought I had, I thought I had the other quarter in 1913, that would be 4 years.

Q. Then the statement that you made on your direct examination that you had had part of this land 5 years and part of it 6 years and had cropped it every year was incorrect, and you wish to retract it?

Mr. Pinkney: That is objected to, the form of the question. If the witness made a miscalculation he ought to correct it, not necessarily a retraction.

A. I have cropped the land since I owned it. I may have been mistaken in the time.

Mr. Palmer:

Q. What I want to know is, were you mistaken as to the time?

A. I were, yes, sir.

Mr. Bronson: That is objected to upon the grounds that it is improper cross-examination, the witness might have misunderstood the question, might have referred to one quarter and not both quarters.

3010 Mr. Palmer:

Q. Then as I understand it, the only year that you have received the crop from the northeast quarter of section 21 is the year 1914?

A. Yes, sir.

Q. You state that you cropped the land that year; what do you mean by that?

A. Well, I mean that it was put in crop by my tenant.

Q. By your tenant?

A. Yes, sir.

Q. What is the name of that tenant?

A. In the year 1914, you mean?

Q. Yes.

A. His name was—I can't just speak the name.

Q. Where does he live?

A. He did live near White Rock, has lived near White Rock last I knew.

Q. You know nothing of where he is now?

A. No, sir.

Q. On what terms did he crop the northeast quarter in 1914?

A. On the crop basis, rental crop basis.

Q. What crop rental basis?

A. The landlord furnishes the seed and pays half the thresh bill and the twine and gives his tenant one half.

Q. Is that what you did that year?

A. Yes, sir.

Q. What were the net returns to you that year from that crop after deducting the cost of the seed, the twine and the thresh
3011 bill?

Mr. Pinkney: We object to that as not proper cross-examination, incompetent and immaterial.

A. Are you speaking of this northeast quarter? I am unable to say exactly what that quarter brought, they were both worked together.

Mr. Palmer:

Q. Can you state approximately what returns you received from the northeast quarter that year under that arrangement?

Mr. Pinkney: Object to that as having already been answered, witness has just answered.

A. Not on that quarter, no, sir, alone.

Mr. Palmer:

Q. Did this same tenant that year of 1914 crop the southeast quarter on the same basis?

A. Yes, sir.

Q. What were your net returns from both quarters, deducting the cost of the seed, the threshing and the twine?

Mr. Pinkney: Same objection urged to that question, not proper cross-examination.

A. The net proceeds of the half section?

Q. To yourself for 1914.

A. You mean the one-half of the crop?

Q. Yes, sir, taking out your seed, twine and threshing.

A. Approximately about $1,500.

Q. You have deducted then the twine, seed and threshing?

A. Yes, sir.

Q. And you say from the entire half section it was about $1,500?

A. For the one-half, for my one-half.

3012 Q. Was 1914 a good crop year in this locality?

A. Fair.

Q. Was it above the average?

Mr. Pinkney: We object to that, he has answered, he says it was fair.

A. I should say so.

Mr. Palmer:

Q. From whom did you buy this northeast quarter in 1913?
A. From the Roberts Land Company.
Q. Where are they located?
A. White Rock, South Dakota.
Q. How long had they owned the land?
A. I couldn't say.
Q. Did you inquire how long they had owned it?
A. No, sir.
Q. Did you inquire of them how much they paid for it?
A. No, sir.
Q. How much did you pay for it?
A. Per acre?
Q. Yes.
A. $50.00.
Q. Was that cash or trade arrangement?
A. There was some consideration of trade.
Q. What was the trade?
A. I traded a couple of cottages in Beloit, Wisconsin, towards the——
Q. At what value?
A. $4,000.
Q. How long had you had those cottages?
A. I believe about 2 years.
3013 Q. What did you pay for them?
A. $3,600.
Q. Was that cash or trade?
A. That was a trade.
Q. Trade for what?
A. I traded land in Kansas for those.
Q. And valued them in the trade of the Kansas land at $3,600?
A. Yes, sir.
Q. The other $4,000 for this northeast quarter, how was that paid?
A. $1,000 of it was cash, the balance was security on the land.
Q. You turned in these cottages at $4,000?
A. Yes, sir.
Q. You gave a mortgage of $3,000?
A. Yes, sir.
Q. And you paid $1,000 cash?
A. Yes, sir.
Q. Did you get an abstract of title?
A. Yes, sir.
Q. Did not that abstract of title disclose to you that the land company acquired the land the same day that they sold it to you at $30.00 an acre?

Mr. Pinkney: We object to that as not the best evidence, asking this witness to recite the conditions of a written document.

A. It didn't disclose that, no, sir, not to my knowledge.

Mr. Palmer:

Q. Did you look at the abstract to see what the consideration in their deed was and when it was dated?

3014 A. I have looked over the abstract.

Q. Do you say it did not disclose the facts I have stated here?

A. I don't say that it didn't disclose it, I didn't see it. I didn't see the——

Q. You didn't look to see, did you, when they got it or how much they paid for it?

A. Well, the abstract isn't in my possession.

Q. Was in your possession, did you see it?

A. I read it over, yes, sir.

Q. Did you look at that abstract to ascertain when this land company got that land or what they paid for it?

A. No, I didn't look to see.

Q. Did you ask the land company anything about when they got it or what they paid for it?

A. No, sir.

Q. Didn't you care?

A. No, sir.

Q. Had you ever seen the land before?

A. Yes.

Q. When?

A. The northeast quarter?

Q. Yes.

A. I have seen it a great many times.

Q. When did you first see it?

A. At the time I bought the south quarter.

Q. When was that?

A. I believe it was 6 years ago, I am not sure.

Q. Did you have that on a contract for a deed also for a time?

A. Yes, sir.

3015 Q. Six years ago, that would be about 1911 that you first saw this land?

A. Yes, sir.

Q. That was the first time you had ever seen any of this land in your life wasn't it?

A. Yes, sir.

Q. And the year 1911 was an extremely dry year in this locality wasn't it?

A. I couldn't say.

Q. Were you not so informed?

A. I don't remember that I was.

Q. Was this land dry that year?

A. Yes, sir.

Q. That you first saw it?
A. Yes, sir.
Q. What season of the year did you see it?
A. In the fall.
Q. Was the Bois de Sioux river dry that fall?
A. I don't remember that.
Q. Now, did you make inquiry as to whom the land company acquired this northeast quarter from?
A. No, sir.
Q. When you got it, was there anybody living on it?
A. No, no one living in the house, no, sir.
Q. Do you know how long it had been since any one had lived on the premises?
A. It was late in the fall that I saw this land. It had been into crops and I understood someone had lived in the house.
Q. You are speaking of 1911?
3016 A. I believe that is the year.
Q. 1911 when you first saw the land it had been into crop?
A. That is the year that I acquired it, whatever year it was.
Q. Which one?
A. The south quarter.
Q. I am talking about the northeast quarter that you say you acquired in 1913. At that time was there anyone living on the premises?
A. Yes, sir.
Q. Who?
A. A man by the name of Peterson.
Q. Was he an owner or tenant?
A. Tenant.
Q. How long had he been a tenant there?
A. I think that one year.
Q. Did he move off as soon as you acquired it in 1913?
A. I believe he moved off that fall.
Q. And he stayed there only the one year of 1913?
A. Yes, sir.
Q. What kind of a crop did he have?
A. He had a good crop.
Q. Did he ask you to rent the land any longer?
A. Yes, sir.
Q. Who had been on the land before he had; did you ask?
A. Mr. Peterson worked the land the year before I acquired it.
Q. Who had lived there previously, anyone at all? Did
3017 you inquire?
A. Someone lived there, yes, sir.
Q. A tenant?
A. Yes, sir.
Q. Now, did you make any inquiry as to how long it had been since any owner had lived on that land?
A. No, sir, I didn't make inquiry.
Q. As a matter of fact, Mr. Westerman, no owner had lived on that land for about 20 years, had there?

Mr. Pinkney: We object to that as incompetent and immaterial.

A. I don't know.

Mr. Palmer:

Q. Did you inquire who the original homesteader was?
A. No, sir.
Q. Or as to how long he had lived there?
A. No, sir.
Q. As to whether he had crops regularly or not?
A. No.
Q. As to whether he prospered on the land or not?
A. No, sir.
Q. Did you make inquiry as to how long various tenants had remained on the land?
A. No, sir.
Q. As to whether they had prospered or not?
A. No, sir.
Q. Or as to the quality of the crops that had been produced before you knew the land?
A. No, sir.

Q. Didn't you care anything about those matters when
3018 you bought that land?

A. Oh, yes.
Q. Well, then, why didn't you inquire about that? Was there any reason why you didn't want to know.
A. I saw the surrounding country.
Q. Have you dealt in lands considerably?
A. I hadn't up to that time, no, sir. I have been a farmer, raised on a farm.
Q. If you have been a farmer and been raised on a farm you knew that conditions sometimes changes respecting lands, did you not?

Mr. Pinkney: We object to that question as incompetent and immaterial.

A. They are not always the same.

Mr. Palmer:

Q. You saw that Bois de Sioux river there right within 20 rods or so of this land?
A. No, there is no Bois de Sioux river within 20 rods.
Q. How many rods is it from the east line of your land over to the Bois de Sioux river, the east line of your northeast quarter?
A. Well, I should say three-fourths of a mile.
Q. Three-fourths of a mile?
A. Pretty close.
Q. From the Bois de Sioux river, from the east line of your land over to the Bois de Sioux river, is that what you want to say?

Mr. Pinkney: We object to that question, he has already answered it.

A. It must be nearly so, isn't it?

3019 Mr. Palmer:

Q. I call your attention to this government plat, Defendant's exhibit 108 and will ask you to look at the northeast quarter of section 21 and the northeast corner of the same. Do you observe that the distance from the east line of your land over to the Bois de Sioux river is 11.54 chains?

A. I see it is.

Q. Do you think that is correct?

Mr. Pinkney: We object to the form of that question, no foundation laid and argumentative.

A. Is the map correct?

Mr. Palmer:

Q. Yes.

A. Yes, there is no doubt about the map being correct, probably.

Mr. Bronson: Move to strike out the answer as no foundation laid for asking the witness as to the accuracy of the map and we desire to ask the witness a question for the purpose of laying a foundation for an objection.

Q. Do you know anything about that government map shown you, Exhibit No. 108?

A. No, sir.

Q. Ever see it before?

A. No, sir.

Q. Know anything about what a chain is?

A. No, sir.

Mr. Bronson: Again we urge the objection.

Mr. Palmer:

Q. Did you examine the Bois de Sioux river to see whether there were any banks to hold the overflow from coming up upon this land?

A. I didn't examine it, no, sir.

Q. Right across the middle of this section 21 there is a natural ravine or waterway, is there not?

A. There is no ravine, no, sir.

3020 Q. No draw there, or depression of any kind?

A. A little lower in the center.

Q. That is over on the west line of your land or northeast quarter, isn't it?

A. Yes, sir.

Q. And it extends on down the southwest quarter?

A. Yes, sir, I believe so.

Q. And from there southwesterly to Traverse Lake?
A. Yes, sir.
Q. And then from the north line of your land it extends northeasterly into the Bois de Sioux river, doesn't it?
A. Yes, sir.
Q. Now, that draw or ravine, you knew when you bought this land, formed one of the outlets of Traverse Lake, did you not?
A. There was no water in this ravine.
Q. But you knew, did you not, that when the Lake got high the water would come up through that outlet and would be likely to flood this land?
A. No, I didn't know that.
Q. Did you make any inquiry concerning it?
A. Yes, sir.
Q. Did you make inquiry to ascertain whether this land was ever flooded?
A. Yes, sir, I did.
Q. You asked this land company about that?
A. No, sir.
Q. Whom did you ask?
A. I asked different citizens at White Rock and vicinity.
3021 Q. Did anybody tell you that that land had been completely flooded in the year 1897?
A. One man told me that there had been water on it a good many years before. He said he had seen it at one time in the spring of the year a number of years before, in the early spring, a little water on one corner in this ravine you speak of.
Q. Did anybody tell you that the land had been completely flooded in 1897?
A. No, sir.
Q. To such an extent that no crops were raised on it that year?
A. No, sir.
Q. Did they tell you that the water remained on there through the season of 1898 to such an extent that no crops were *resied* upon it?
A. No, sir.
Q. Did they tell you that there had been water upon it during the summer of 1908?
A. No, sir.
Q. To such an extent as to destroy the crops?
A. No, sir.
Q. Did they tell you that the land was badly submerged with water in the years 1881, 1882 and 1888?
A. No, sir.
Q. Did you inquire particularly as to the history of that land with respect to floods?

Mr. Pinkney: We object to that as having already been answered.

A. No, I didn't inquire.
Mr. Palmer: What buildings did this northeast quarter have on when you acquired it?
3022 A. There was a granary and an old house.

Q. How large a house?
A. Well, around 5 rooms, I think it is. 5 or 6 room house.
Q. One story?
A. No, 2 story house.
Q. A story ans a half or 2 stories?
A. A story and a half, you call it.
Q. A story and a half house, about 5 or 6 rooms. Were the buildings painted?
A. No, sir.
Q. Had they ever had any paint on them?
A. I couldn't say.
Q. Did this house have a stone foundation under it?
A. Yes, sir.
Q. Was it in a good condition of repair?
A. Not very, no, sir.
Q. And the granary, was that in good condition of repair?
A. Very good, yes, sir.
Q. Was that comparatively new?
A. Well, no, not new.
Q. Wasn't there any barn on the premises?
A. No, sir.
Q. Weren't there any hog house or chicken house?
A. No, sir.
Q. Was there a well?
A. No, sir.
Q. Was there any windmill?
A. No, sir.
3023 Q. No fences?
A. Yes sir.
Q. Where?
A. There is about 20 acres of pasture fenced on this northeast quarter.
Q. Barb wire fence?
A. Yes, sir.
Q. Any orchards?
A. No, sir.
Q. Small fruits of any kind?
A. No, sir.
Q. Was there a grove?
A. Yes, sir.
Q. What sort of a grove?
A. Cottonwood grove.
Q. How large in extent, how many acres?
A. Oh, a few around the buildings, a row around the buildings.
Q. Was there a garden plot?
A. No, sir.
Q. As a matter of fact, when you acquired that land it had the appearance of being in a badly rundown condition, did it not?

Mr. Pinkney: We object to the form of the question.

A. I can't say that it did.

Mr. Palmer:

Q. It didn't have the appearance of being in a prosperous and well kept condition, did it?
A. The land did.
Q. I mean the premises?
A. Not the buildings, no, sir.
3024 Q. How much of the land was in cultivation when you acquired it?
A. Approximately 140 acres.
Q. Of the 160 acres?
A. Yes, sir.
Q. Where was this cultivated land, what direction from the buildings?
A. Some of it was east and some of it was west of the buildings.
Q. Where do the buildings stand?
A. Buildings stand back from the road about, well, approximately 40 rods perhaps.
Q. West of the road?
A. Yes, sir.
Q. And the road is along the east line?
A. Yes, sir, also the north line.
Q. What condition was that road in when you got the place along that east line of 21?
A. Good condition.
Q. Was it traveled by the public generally?
A. Yes, sir.
Q. Graded?
A. Yes, sir.
Q. Bridged where necessary?
A. You are speaking of the east and north road? The north road was bridged.
Q. How much of a grade was there there in 1914, grade on the road on the east line of 21?
A. I can't say.
Q. I call you- attention again to this government plat and will ask you if the land indicated as swamp or marsh land
3025 in the northwest corner of the northeast quarter of 21 is the area that was first flooded, wet in 1915?

Mr. Bronson: We object to that on the ground that the witness does not understand the exhibit, does not understand what counsel asked about swamp land, does not understand the markings?

Q. Do you understand about that map or the markings?
A. No, sir.

Mr. Palmer:

Q. Well, it is that shaded portion which indicates swamp or marsh land. Is that the area——
A. That land was all into crop except as I said and pasture.

Q. Where was the pasture?
A. I should say in about the center of that quarter.
Q. On the north side?
A. Yes, sir, well, extending down clear through the quarter?
Q. Did it extend to the northwest corner, the northwest corner of that quarter?
A. No, sir.
Q. Was it up in that northwest corner where the water first came in 1915, do you know?
A. I don't know.
Q. The southeast quarter you say you got that in 1911, did you get the crop of 1911 on that?
A. I think not.
Q. Was it in crop that year?
A. Yes, sir.
Q. Was there a tenant on the farm?
A. I think one had been there lived there.
Q. Was he there when you got the land?
A. No, sir.
3026 Q. Was the house standing there empty?
A. Yes, sir.
Q. What condition was the house in?
A. Very good condition.
Q. How big a house was that?
A. 6 room house.
Q. A story and a half?
A. Yes, sir.
Q. Not very large rooms, were they?
A. Very good sized rooms.
Q. Was the house painted?
A. Yes, sir.
Q. How long since it had been painted, would you judge?
A. I couldn't say.
Q. Were there other good farm buildings on that southeast quarter when you got it?
A. Yes, sir.
Q. How much of a barn was there?
A. A barn that holds 20 head of stock.
Q. Is there a hog house, chicken house?
A. Hog house in the rear of the barn, yes, sir.
Q. Did you count the hogs when you said 20 head of stock?
A. No, sir.

Mr. Pinkney:

Q. You mean the rear of the barn or attached to the barn?
A. Attached to the barn.

Mr. Palmer:

Q. Was there a garden plot there?
A. Yes.

Q. Orchard?
A. Yes, sir.
3027 Q. Small fruit?
A. Yes, sir.
Q. Farm fenced?
A. Yes, sir.
Q. How much of it?
A. About 20 acres.
Q. Do you know how long since any one had lived in the buildings when you got it?
A. I think they moved away in the fall.
Q. After you got it did any one live in the buildings?
A. Yes, sir.
Q. Who?
A. I can't give the man's name.
Q. Was he a tenant of yours?
A. Yes, sir.
Q. He farmed the land for you in 1912?
A. Yes, sir?
Q. On what basis?
A. On the grain basis.
Q. And in 1913?
A. Yes, sir.
Q. The same tenant?
A. I think the same tenant worked it that year.
Q. And in 1914, did the same man farm it that farmed it in 1913?
A. I don't think so?
Q. You had a different man in 1914?
A. I think so?
Q. In 1914 did this tenant of yours farm the whole half section?
3028 A. Yes.
Q. What returns did you get from the southeast quarter in 1913 on this crop rental basis, do you recollect?

Mr. Pinkney: We object to that as incompetent and immaterial, not proper cross-examination.

A. Not exactly, no sir.

Mr. Palmer:

Q. Generally speaking, were they good or poor?
A. Well, an average crop; it was handled through an agent.
Q. What did you pay for that land?
A. $50.00.
Q. Whom did you get it of?
A. Of the Roberts Land Company, I believe.
Q. You got that, you say on a contract for a deed in 1911; wasn't it Oscarson and Company that you made the deal with?
A. It might have been Oscarson Company.

Q. Did you ask then when they got the land?
A. No, sir.
Q. Or what they paid for it?
A. No, sir.
Q. Did you get an abstract of title of that too?
A. Well, it isn't in my possession, no, sir.
Q. Did you get one, did you see one?
A. They furnished one, yes, sir.
Q. Didn't that disclose to you that they got the land in 1904 and that they got it for $15.00 an acre?

Mr. Pinkney: We object to that as not the best evidence of what the abstract contains, incompetent and immaterial.

A. No, sir.

3029 Mr. Palmer:

Q. Didn't you look at it to see?
A. I don't remember whether I looked at it or had some one examine it for me.
Q. What you mean by saying it didn't disclose that fact to you, was that it didn't disclose that fact to you because you did not look to see it?
A. I had it examined for the title, that is all.
Q. Didn't you ask the land company when they bought it?
A. No, sir.
Q. Nor what they paid for it?
A. No, sir.
Q. Didn't you care anything about that?
A. That would have been a foolish question for me to ask.
Q. It was best not to know anything about those matters?

Mr. Pinkney: Objected to as argumentative.

A. I didn't expect them to tell me what they paid for the land.

Mr. Palmer:

Q. The abstract before you would have given you some information——
A. Not always, does it?
Q. Did you inquire as to who had been farming the land during the time the land company had owned it?
A. No, sir.
Q. Did you ask how long it had been since any owner had lived on it?
A. Yes, sir.
Q. What did you ascertain?

3030 Mr. Bronson: Objected to as hearsay and incompetent and immaterial.

A. I was told that the owner had lived there, I believe a man by the name of Anderson.

Q. Otto Anderson?
A. I think his name was Anderson.
Q. And he had lived there until along in 1904 some time?
A. I can't say.
Q. Did you ascertain that Anderson had lost it on a mortgage foreclosure?
A. Yes, sir, I think that was—I believe something on that order.
Q. So you knew that Anderson was the last owner who had lived there and he had lost it on a mortgage foreclosure, didn't you?
A. I understand that that was the case, that he was the man that lived there, I think that was his name.
Q. Did you inquire as to whether he had had good crops on the land?
A. No, sir.
Q. Or whether he prospered upon it?
A. No, sir.
Q. Did you inquire as to who had homesteaded it?
A. No, sir.
Q. Or how long the homesteader had lived there?
A. No, sir.
Q. Or whether he had prospered upon it?
A. No, sir.
Q. Did you understand my former questions as to floods I included the southeast quarter too?
3031 A. Yes, sir, I did.
Q. Did you make inquiry as to how many times this land had changed hands?
A. No, sir.
Q. You say you paid $8,000 or $50.00 an acre for the southeast quarter. How did you pay it?

Mr. Pinkney: That is objected to as incompetent and immaterial.

Mr. Palmer:

Q. Was it cash or trade?
A. Some cash and some trade.
Q. What was the trade?
A. I traded in some merchandise.
Q. What character of mechandise?
A. Well, shoes.
Q. Where was the stock of merchandise?
A. It was stock that I owned at Capron, Illinois.
Q. Was it a stock that you had traded for?
A. No, sir.
Q. Were you engaged in the shoe business at that time?
A. It was not all shoes, general merchandise, general dry goods and shoes.
Q. Were you engaged in the general merchandise business at that time?
A. Yes, sir.
Q. How long had you had this stock of merchandise?

A. Not long.
Q. You had had it long enough so you wanted to get rid of it, hadn't you?
A. Not particularly so.
3032 Q. How long had you had it, about?
A. 4 or 5 years, I had been in the business 4 or 5 years.
Q. And this was what you had left?
A. No, it was lines that was discontinued.
Q. And these lines you were discontinuing you traded off to this land company on this land for how much money?
A. I think it was $2,000, the stock.
Q. How did you pay the rest?
A. I gave a mortgage for $3,000 and the balance was cash.
Q. $4,000 in cash?
A. $3,000 mortgage and the balance cash, I said.
Q. That would be $3,000 cash?
A. $3,000 cash.
Q. Is that what you paid this land company for that land?
A. Yes, sir, if that is the way it figures out.
Q. Didn't the abstract disclose to you that in 1911, at the time you bought this land from this land company, that they got it at the same time at $30.00 an acre?

Mr. Pinkney: We object to that, he is asking him to state the contents of a written instrument, incompetent and immaterial.
Mr. Palmer: No, I am asking him what he knows.

A. I don't know what they paid for the land.
Q. Did this abstract show you that they got it the same day at $30.00 an acre that they put it on to you for $50.00 or that they sold it to you for $50.00?
A. I don't think I saw the abstract at the time. I
3033 think I had this on a contract for deed until the $3,000 was paid.
Q. In 1915 how did you put this crop in; what kind of grain did you have in?
A. I put in 50 acres of wheat.
Q. How did you put that in, yourself?
A. No, sir.
Q. Who did put it in?
A. I hired this put in. I sent a man from Illinois up here.
Q. Didn't you have any tenant on the land that spring?
A. Yes, sir, moved on the fall before.
Q. That is the man you sent from Illinois?
A. I sent a man up in the fall of 1914.
Q. In the fall of 1914 you sent a fellow up from Illinois?
A. Yes, sir.
Q. Couldn't you find any local tenant?

Mr. Pinkney: Objected to as incompetent and immaterial.

A. The man Peterson wished to move back, yes, sir, that previously lived there.

Mr. Palmer:

Q. You sent a man out from Illinois in 1914, and he put this crop in under hire?
A. Yes, sir.
Q. You furnished him with horses?
A. I did.
Q. And machinery?
A. Yes.
Q. And he put in 50 acres of wheat, you say?
A. 50 acres.
3034 Q. 50 acres of barley and there other crops you have described?
A. Yes, sir.
Q. Where did he have that 160 acres of oats?
A. Well, he had it in different places on the farm.
Q. Well, that is half of the whole farm that he had into oats, according to your figures.
A. Yes, sir.
Q. Where did the land lay that had on the 160 acres of oats?
A. I can't tell you exactly where the oats were, all of them.
Q. Where was that 50 acres of barley?
A. There was some of it south of the house, 30 acres there, I should think.
Q. 30 acres south of the house on the southeast quarter?
A. Yes, sir.
Q. Where is the rest of that barley?
A. It was on the other side of the pasture in the southeast quarter.
Q. Then the 50 acres of barley was on the southeast quarter?
A. Yes, sir, I think so.
Q. Where was the 50 acres of wheat?
A. I think the most of it was on the northwest corner of the north quarter.
Q. Northwest corner of the north quarter?
A. Yes, sir.
Q. Well, 50 acres would take up a pretty good corner. Do you think it was all up there?
A. I am not sure that it was all there, no, sir. I lived in Illinois,
3035 Q. Where is that man that put that wheat in that year?
A. He is somewhere in Illinois.
Q. Do you know anything about where he is?
A. I think he lives near Sharon.
Q. What time did you come out here in 1915 first?
A. I was here in April of that year when they were putting in crops.
Q. Did you assist in putting in the crops?
A. No, sir.
Q. How long were you here in April?
A. About a week.
Q. Were the crops all put in while you were here?
A. Not all of them, no, sir.

Q. When did you come back again?
A. In the late fall.
Q. About what time?
A. Latter part of October, I think.
Q. In the latter part of October?
A. I think so, some time in October.
Q. Between those times you had not seen this crop?
A. No, sir.
Q. When you saw it the water was over it?
A. Yes, sir.
Q. Could you see any part of the crop?
A. Yes, sir.
Q. What did you see?
A. Crops standing in the water.
Q. What did you see standing in the water, what kind of crops?
A. Well, the oats.

3036 Q. In the latter part of October you saw 160 acres of oats standing in the water?

A. Well, I saw where they had been, crinkled down in the water, yes, sir.
Q. The whole 160 acres?
A. I didn't drive over it, no, sir.
Q. You saw the wheat standing in the water?
A. I did.
Q. Drive over it?
A. Yes, sir.
Q. Over the wheat?
A. I drove out into it.
Q. Into the water?
A. Considerable water in it, yes, sir, mud and water.
Q. Now, that was wheat, as I understood you, that would go 20 bushels to the acre?
A. I think it would.
Q. It had been flooded according to your best information, in June?
A. Yes, sir.
Q. And how high was it when you saw it in the field in the fall?
A. This wheat was headed out when I saw it.
Q. It had got headed by October? You could see the heads on it?
A. Yes, sir.
Q. How it looked?
A. Yes, sir.
Q. And it was 20 bushels to the acre wheat, was it?
A. Fine crop of wheat.

3037 Q. Fine crop of wheat standing in the water the last of October. You didn't try to harvest it?

A. No, sir, I did not.
Q. How much did you figure the oats an acre?
A. 40 bushels, I think.
Q. You saw that whole 160 acres of oats there in the fall of 1915, late in October, and they were 40 bushels to the acre oats?

A. No, I didn't see the — I didn't drive out into the oats.
Q. How do you know there were 40 bushels oats then?
A. I am just judging from other land that was not flooded.
Q. I am not asking you about other land; I am asking you about this land.

Mr. Pinkney: We submit the witness has answered the question as to how he estimated it.
Mr. Palmer: You are simply guessing from the fact that somebody else had 40 bushels of oats to the acre that these must be 40 bushel oats, aren't you?

A. I am judging from others that had crops in the vicinity that there were not flooded, yes, sir.
Q. They had how much to the acre?
A. About 40 bushels.
Q. Who had it?
A. Different individuals.
Q. Well, if there are different individuals, there must be one; tell me one?
A. I can't tell you the name of any.
Q. Can't you remember any name?
A. No, sir.
3038 Q. Who had 20 bushel wheat to the acre that year?
A. Well, that was about the average crop.
Q. The average crop?
A. Yes, sir.
Q. Surely you can tell me one man that had it?
A. No, I am not acquainted up here much.
Q. How did you figure that barley, how much to the acre?
A. 35 bushels.
Q. Who had 35 bushels of barley to the acre?
A. I am not acquainted.
Q. Did you see this barley late in October?
A. No, I did not.
Q. You just simply guessed that would be 35 bushels an acre barley from the fact that somebody else may have had 35 bushels, is that it?
A. I had that many bushels to the acre myself on land near here.
Q. Did you have some more land near here?
A. Yes, sir.
Q. Where is that?
A. Over in Roberts County.
Q. Roberts County, South Dakota?
A. Yes, sir.
Q. You had how many bushels to the acre, 35 bushels to the acre of barley on that land?
A. Yes, sir.
Q. That wasn't in this Bois de Sioux valley or adjacent to a river?
A. Well, it is over in the Sisseton reservation.
3039 Q. Take that wheat as it stood in the field in June, 1915; do you think it was worth $16.00 an acre as it stood there?

Mr. Bronson: We object to that as not being a proper statement of what the witness has testified as to its value.

A. I couldn't say just what it was worth as it stood there.

Mr. Palmer:

Q. The barley you figure approximately $20.00 to the acre as it stood in the field in June. You think that was a fair market value of barley in the field in June?
A. I figured it 35 bushels to the acre.
Q. It wasn't 35 bushels to the acre in June, was it?
A. I figured it would have made that much.
Q. Well, it would have made that much if it had made it, of course.
A. Yes, sir, I figured this would have made as much as the other land I owned that was not flooded.
Q. I am asking you for the fair market value of that barley as it stood in the field in June.
A. I don't know.
Q. The rye you figured about $18.00 an acre in June as it stood in the field. Do you think that is a fair market value of it?
A. I think so.
Q. As it stood in the field in June?
A. Yes, sir.
Q. If you had seen that rye standing in the field in June you would have paid for it $18.00 an acre as its fair market value?

Mr. Bronson: We object to that as incompetent, immaterial and irrelevant.

3040 A. I don't say I would.

Mr. Palmer:

Q. Now, the oats you figured at $15.00 an acre. Do you think that was the fair market value of those oats standing in the field in June, $15.00 an acre?
A. I never purchased any oats standing in the field at that time of the year.
Q. Did you ever sell any standing in the field at that time of the year?
A. No, sir.
Q. Or see any sold?
A. No, sir.
Q. Take that 40 acres of pasture, $3.00 an acre. Did you ever rent a foot of that pasture at $3.00 an acre?
A. No, sir.
Q. Did you ever rent it for anything in your life, that pasture?
A. No, sir.
Q. Now that 10 acres of hay land, you figured that $3.00 an acre. Did you rent that hay land at $3.00 an acre in your life?
A. Yes, sir.

Q. To whom?
A. To one of the tenants.
Q. When?
A. I can't tell you the year.
Q. How many years?
A. I think two years that was the consideration.
Q. And he paid it?
A. Yes, sir.
Q. $3.00 an acre.
3041 A. Yes, sir.
Q. For hay land?
A. Yes, sir.
Q. You say that 1914 was a good crop year and you got approximately $1,500 from this land?
A. Yes, sir, as near as I can remember.
Q. For 1915 you have more than three times that amount?
A. Not this land, you asked me about the north quarter; that was the returns from the north quarter.
Q. I beg your pardon, let's go back to that. You say that your net returns from the north quarter alone in 1914 were $1,500?
A. I was thinking about the tenant.
Q. The net returns from the whole quarter?
A. Yes, my half of the net returns, yes, sir.
Q. Was $1,500?
A. As near as I can remember, yes, sir.
Q. Do you think that 1915 was any better crop year than 1914?
A. Yes, I — so.
Q. You think it was three times as good a crop year?
A. No.
Q. Do you think it was twice as good?
A. No, I didn't say it was, I didn't figure it that way.
Q. Why then have you figured more than three times your net returns in 1914 as your returns of 1915?
A. $1,500 was my half of the rental crop in 1914. In 1915 that was the whole crop.
3042 Q. Well, but it was net returns after taking out all expense, you say?
A. $1,500 was my share of the returns in 1914 and would make the net returns on the whole thing $3,000 including what the tenant got.
Q. But in 1915 you say you have taken off the seed, the planting, the harvesting, marketing, threshing and all other expenses and you have net returns of $4,562?
A. I haven't taken off the seed, no, sir.
Q. When you are talking about net returns, don't you mean net returns?
A. I sowed seed in 1915.

Mr. Bronson:

Q. You lost it too?
A. Yes, sir.

Q. As well as the labor of putting it in?
A. Yes, sir.

Mr. Palmer:

Q. When you were figuring the net returns here as $4,562, or figuring the net loss, you included in that the amount you paid for seed, the amount you paid the man, the work of your teams and machinery and all of that, did you?
A. No, I don't include that.
Q. As a matter of fact, you didn't include any of those things; you simply figured up the value of the crop at the prices it might have brought if it had yielded as you think it might have and if it had brought the prices?
A. I included the seed at the market price and averaged the crops with other lands I have in this vicinity.
Q. What was your information as to the year 1916 in this vicinity as a crop year?
A. It wasn't as good a year.
3043 Q. As 1915?
A. No, sir.
Q. Wasn't as good a year as 1914?
A. Well, no, it was not.
Q. The average crop in this locality wasn't more than half, was it in 1916?
A. I don't think so.
Q. Nobody got more than half a crop?
A. I don't think so.
Q. Is that the basis on which you figure this rental for 1916?
A. Yes, sir.
Q. You say that your rental returns in 1914 were $1,500. Now, you figured your rental returns for 1916, which you saw wasn't more than half as good a year, at $1,624.70; how did you do that?
A. It was based on other crops in the vicinity.
Q. Basing it on other crops in the vicinity would you say that other crops in the vicinity were about half?
A. I might not say exactly half.
Q. About half what they were in 1914; then if they were your returns would not be more than half of what they were in 1914?

Mr. Bronson That is objected to, it is on account of the variations in prices.
(Question withdrawn).

Mr. Palmer:

Q. What is your information as to the year 1917 in this locality as to a crop year?
A. Well, you mean as to good or bad?
Q. Yes?
A. Not very good.
3044 Q. Not as good as 1914?

A. No, sir.

Q. Now you say you figured your net rental returns for 1917 at $2,932.50 about twice what they were in 1914. Is that the way you want to leave your testimony?

A. Yes, sir, that is the way I have it.

Q. The way you got those values for 1916 and 1917 you took a certain number of acres — wheat and a certain *m*ember of acres of barley and a certain number of acres of oats and figured a certain yield and a certain price per bushel in the market, don't you?

A. Yes, sir.

Q. I want to ask you what your best information is as to the fair cash rental value of lands such as those in this locality in the years 1916 and 1917?

A. I never rented any land for cash.

Q. Didn't you ever hear of any land being rented for cash in this locality?

A. No, sir. I never did.

Q. Your farm over in Roberts county, did you ever rent that for cash?

A. No, sir.

Q. Well, it has been testified here that the fair cash rental value of uncultivated land is about $3.00 an acre and of cultivated land about $4.00 an acre; have you any opinion about that?

A. No, sir, I have not. I have never rented any lands for cash rent in this vicinity and never heard of any being rented for cash rent in this vicinity, excepting hay or pasture.

Q. And corn land, how about that?

3045 A. I never rented any that way.

Q. Have you heard of any being rented for cash, corn land?

A. I have heard of it but not the price.

Q. You have stated your various items of damage here with the expectation of recovering them from some source, haven't you?

A. Well, that is what I am here for.

Q. And have you contributed a sum of money towards the expense of instituting and maintaining this action by the State of North Dakota against the State of Minnesota?

A. Yes sir.

Q. And has that been done with the expectation and the understanding that if damages are recovered by the state of North Dakota from the State of Minnesota, that you will receive your damages from the State of Minnesota, that you will receive your damages as you testified to them here?

A. Yes, sir.

Q. You are not now or ever have been a resident or citizen of North Dakota?

A. No, sir.

Redirect examination.

By Mr. Bronson:

Q. You saw as you stated the crops of wheat, barley rye and oats in the condition that they were in at the time that you were up here in 1915?

A. Yes, sir.

Q. And you have farmed enough and are enough of a
3046 farmer are you not, to see what that stand as it was then, kind of wheat and the character of the straw, character of the heads and the same as applying to the other grains so as to know what ordinarily it would have yielded if no flood conditions had occurred under the seasonal conditions?

A. I think so.

Q. And you have made these computations with that knowledge and understanding of what you saw?

A. Based on that, yes, sir.

3047 LOUIS N. ABBOTT being duly sworn in behalf of complainant, testified as follows.

Examined by Mr. Bronson:

Q. You may state your name, age, residence and business.

A. Louis N. Abbott, 44, Fairmount, North Dakota, real estate.

Q. How long have you lived here?

A. Nearly 17 years.

Q. Are you connected with the Crandall, Flynn and Tuttle Land Company?

A. Yes, sir, I was and am yet.

Q. You may state whether you ever looked after for this company lands known as the southwest quarter of Section 17, Township 129, Range 47, Fairmount township, Richland county, North Dakota, consisting of about 160 acres?

A. Yes, sir.

(NOTE—See p. 2,956, witness corrects.)

Q. For how many years has the company had this land?

A. They don't own the southwest of 17, 129, 47.

Q. For how many years did they have it?

A. They only had it a few months, as I recall.

Q. Then it was sold to whom?

A. John J. Nagel, he is the present owner of it.

Q. He has had it for about 3 years?

A. Yes, sir, he has had it since about 1912, as I recall it. I am not sure as to that date but I think he got it in 1912.

Q. That would be 5 years at the present time. What did he pay for it?

A. I can't remember.

3048 Q. What kind *od* land is it?

A. It is considered very good land.

Q. State the character of the soil.
A. Clay loam.
Q. Surface soil?
A. Clay loam.
Q. In 1915 was any of this land flooded?
A. No.
Q. It wasn't covered with water in 1915?
A. No, sir.
Q. Was it all in crop in 1915?
A. Yes, sir.
Q. What was the return in 1915 to the owner, if you know?
A. As I recall it, it was about $700. It was over $700, was it nearer $800.
Q. For 1915?
A. For 1915.
Q. And how was the farm operated in 1915, on the tenant crop plan?
A. On a half share basis, grain basis.
Q. On what we term the crop plan basis?
A. Yes, sir.
Q. Who was the tenant that year?
A. I can't recall whether a party by the name of Wasson worked it last year or whether Clarey worked it, I can't recall.
Q. You looked after the returns for the owner that year?
A. Yes, sir.
Q. Where does Mr. Nagel live?
3049 A. He lives in Illinois.
Q. In 1916 did you likewise look after this land?
A. Yes, sir.
Q. And was it put into crop in 1916?
A. A little of it.
Q. In what condition was this land in the fall of 1915 with reference to being wet or capable of being plowed, or anything of that kind?
A. Well, there was—it was only partly plowed in the fall of 1915. I can't recall the reason, the whole reason for its not being plowed. As I remember it the tenant, we changed tenants, and another tenant took it and didn't get to it.
Q. In 1916, what was the condition with reference to flood waters upon or adjacent to this land?
A. It was all very wet. There was about 60 acres *of* more that was too — to get on to do anything with at all.
Q. By reason of those flood conditions?
A. Yes, sir.
Q. You saw these flood conditions in the years 1915 and 1916 in this flooded territory, did you not?
A. Yes, sir.
Q. In 1916 what crop was lost by reason of these flood conditions generally speaking?
A. [illegible] there was very little crop return from the land in 1916.
Q. What do you consider to be for the year 1916 the rental value

loss sustained by reason of the inability to farm or crop these premises on account of those flood conditions over the acres of land so affected by such flood conditions?

3050 Mr. Palmer: That is objected to as no foundation laid, witness not shown himself competent to testify.

A. I consider that the loss on that quarter section was about $400.

Mr. Bronson:

Q. That is, the rental loss?
A. Rental loss to the owner.
Q. For the year 1916?
A. Yes, sir.
Q. Isn't that the southeast of 8, the Nagel land?
A. That is a mistake. I had in mind the southeast of 8. This southwest of 17 is owned by the Crandall, Flynn and Tuttle Land Company.
Q. Now, Mr. Abbott, to straighten out the testimony you have been referring——
A. I have been referring all the time to the southeast of 8.
Q. Southeast of Section 8, Township 129, Range 47?
A. Yes, sir.
Q. Which is known as the Nagel land?
A. Yes, sir.

Mr. Palmer: That is objected to as not plead- in the bill of complaint, not covered by the area alleged to have been flooded in 1915 and 1916.

The Witness: The loss on that southeast of 8 was about $400 in 1916.

Mr. Bronson:

Q. Now, this Nagel land, how much in 1917 by reason of those flood conditions was not able to be cropped?
A. A little more than 60 acres, about 65 acres.
Q. For which there was a loss of the use thereon for the year 1917?
A. Yes, sir.

3051 Q. And what was the rental value of the use of such acres so affected for the year 1917, not capable of being farmed or used for farming purpose by reason of such flooded conditions?
A. I consider the loss on that land in 1917, as about $250 to $300.
Q. I show you Exhibit 42 purporting to be a photograph of the Nagel land, southeast quarter of 8, and ask you to state whether or not you have observed the growths of cat-tails on that land similar to what the photograph purports to represent?
A. I have.
Q. You may state whether or not that growth came up after the existence of those flood conditions on those premises?
A. It did.
Q. You may state what the reasonable cost would be of restoring these lands so flooded by reason of these flood conditions to their

former State of cultivation, arability, tillability and usability for farming purposes, the Nagel land, per acre.

Mr. Palmer: Objected to, the witness not having shown himself competent to testify, no foundation laid.

A. I consider it worth about $5.00 and acre.

Mr. Bronson:

Q. Referring to the southwest quarter of Section 17, Township 129, Range 47, this land is owned by this company, is it?
A. That is owned by this company.
Q. They have had it for about how long?
A. They acquired title to that as I remember it in the fall of 1915.

Q. How long have you looked after it?
3052 A. I commenced to look after it in the fall of 1915.
Q. Was there any crops destroyed on that in the year 1915?
A. No.
Q. Do you know what the crop returns were to the owner for the year 1915 or to this company?
A. The returns from that land were nearly $600 in 1915.
Q. That land was rented out that year on this crop plan?
A. Yes, sir.
Q. Now, in 1916 was this land subjected to those flood conditions?
A. It was.
Q. To what extent.

Mr. Palmer: That is objected to as not within the pleadings, not described in the bill of complaint.

A. About 80 or 90 acres was flooded.

Mr. Bronson:

Q. And no use was received?
A. No use from the flooded portion except a small consideration was paid for the pasture land, or part of the pasture.
Q. What do you state to be the value of the use of such lands so flooded in the year 1916 rental value?
A. Rental value loss was about $200.
Q. For the year 1916?
A. 1916.
Q. What shape was that land in in 1917 by reason of these flood conditions.
Q. It was—the flooded portion was in bad shape. That is, some of the pasture was——

Q. Was any portion of that, the use of it, lost in 1917?
3053 A. Yes, sir.
Q. To what extent, by reason of these flood conditions?
A. About 20 acres, 20 to 30 acres of the one half portion?
Q. In what shape was the pasture?

A. Pasture was damaged, that is, part of it where the water had stood, the grass was killed and weedy.

Q. What do you state to be the rental value of the premises so affected by those flood waters in the year 1917 as it would have been but for the existence of those flood conditions for the year 1917?

A. Well, I consider the loss for 1917 $100 to $150.

Q. Are there any improvements on this said southwest of 17?

A. Yes, sir.

Q. State them.

A. A barn, rather an old barn, a granary, a well, some trees, some pasture and yard fences.

Q. What kind of land is this?

A. It is clay loam.

Q. Mr. Abbott, you say you have been here 17 years?

A. Yes, sir, nearly.

Q. 17 years been in the real estate business?

A. Yes, sir.

Q. You have become familiar more or less with the lands in this flooded territory as well as in Fairmount township generally during your period of residence?

A. Yes, sir.

3054 Q. Have bought and sold lands?

A. Yes, sir.

Q. Dealt in lands?

A. Yes, sir.

Q. Became familiar more or less with land values?

A. Yes, sir.

Q. And with the fertility and productivity of the soil?

A. Yes, sir.

Q. And its suitability for sale purposes and crop purposes for farm lands?

A. Yes, sir.

Q. You may state whether or not these lands within this flooded territory are known as Red river valley lands?

A. They are.

Q. How do you know them to be such?

A. Well, by the authority of the United States government, maps, plats and their geological survey thereof. I can cite one instance, the monogram #25, by Warren S. Upham.

Q. These lands, you know what I refer to when I speak of the lands affected by the flood conditions of 1915 and 1916?

A. Yes, sir.

Q. You have personally observed them and seen them during the years since the flood conditions, during those years?

A. Yes, sir.

Q. Generally speaking, they are marked on this Complainant's Exhibit 1, in North Dakota in the yellow shaded designation?

A. Yes, sir.

Q. Are those the lands you refer to?

A. Yes, sir.

3055 Q. Now, you are in a general way familiar with Red River valley lands in the so-termed Red River valley?

A. I am.

Q. You may state whether or not the lands in this portion of the Red River Valley shown on Complainant's Exhibit 1, which were flooded in the years 1915 and 1916, as to fertility and productivity compare favorable with the other lands in the Red River valley?

A. They do.

Q. You may state whether or not you have ever known in your experience here, of there ever being any crop failure or inability to farm, cultivate, produce crops upon these lands in this Red River territory so flooded in the years 1915 and 1916, up to the flood conditions of 1915 and 1916 and 1917?

A. No, that is, not general.

Mr. Palmer: You better leave it that way.

A. I can't answer it by yes or no.

Mr. Bronson: Answer it in your own way.

Mr. Palmer: You answered it right.

A. I answer that in this way. That where there are marked draws or marked waterways runnings through some of those lands there has been springs where a small portion could not be farmed. I don't mean that the land generally could not be farmed at any other years previous to those mentioned.

Mr. Bronson:

Q. You have witnessed in the years 1915 and 1916 the inability to farm, cultivate and raise crops on these lands within the yellow shaded portion as shown on that map?

A. Yes, sir, I noticed the inability to raise them.

Q. You saw them flooded?

A. Yes, sir, I saw them flooded.

3056 Q. In all your experience that you have had here in these 17 years, my question directed to you was whether or not there had ever been a time during the period of time you had been here, when there was the inability to farm, cultivate or to raise crops on these lands in that territory, designated portion I have mentioned, of these Red River Valley lands by reason of flood conditions?

A. No, sir.

Q. Now, you have mentioned about some draws and waterways, some marked draws and waterways, which do exist on certain of these lands, do they?

A. Yes, sir.

Q. And you have stated that in some seasons these draws or waterways may have water in them?

A. Yes, sir.

Q. And that wouldn't interfere with the cultivation of the balance of the land?

A. No, sir.

Q. And these waterways or draws as you speak of them, are not

any more peculiar to this territory than they are to the entire Red River valley territory?

A. No, sir, they are not.

Q. They serve as natural drainage waterways or drai-age draws?

A. Yes, sir.

Q. What has been the general productivity of these lands therefore, in your residence, here and your experience up to the years 1915 and 1916?

A. Fairly good.

Q. Have you specific recollection with respect to the land that Mr. Schouweiler testified about, the northwest of 22 as to
3057 the crop returns of that in the year 1912?

A. Yes, sir, I have, because I had charge of it in that year. Crop returns on that were $2,529.

Q. On the northwest quarter section of 22?

A. On the northwest quarter section of 22-130-47.

Q. Into what sort of crop?

A. Wheat.

Q. Now you may — what, comparatively was the market value of lands in this flooded district so flooded in the years 1915 and 1916 and 1917, as compared with land further west not subjected to those flooded conditions of 1915, prior to the year 1915?

A. In the flooded district there wasn't enough sales, in my estimation, to warrant the establishment of a price.

Q. You mean after the flood?

A. I mean after the flood.

Q. I am talking about the condition existing before the flood.

A. They compared about the same. Generally speaking, they compared the same.

Q. In what way have the flood conditions affected the value of these lands so flooded in 1915 and 1916?

A. Well, they have lessened the market value to a great extent.

Q. Just explain.

A. Well, for the reason that these lands could not be sold to a prospective purchaser by reason of the flood conditions and the results of the floods. They were covered with rushes, weeds and cat-tails; they are unable to be farmed, some of them since, and therefore there was no sale, to my knowledge, nothing to establish a price.

3058 Q. What will you state to be, prior to the existence of those flood conditions on these lands that were affected by the flood conditions, as to the range of market value of these lands so affected, prior to 1915?

A. Why, a general range of prices on those lands was from $65 to $85.

Mr. Palmer: Not the general range of prices, but the fair market value he is asking you for.

A. I will state that as a fair market value.

Mr. Bronson: Are you familiar with the rental method of letting out farms and farm lands in Fairmount township?

A. I am.

Q. Will you state the crop plan method?

A. Why, the usual method of renting is on the half share basis. There are other plans, but the usual method is on the half share basis. The owner furnishing the seed getting half of the crop that is produced to small grain and paying a certain portion of the thresh bills, for instance, usually specified as stack threshing prices. Some cases, one half of the twine bills and on pasture, corn and hay lands, usually a cash rental.

Q. How is this cash rental figured, or how is it usually made?

A. Hay is generally figured at from $1.50 to $3.00 and acre, sometimes more.

Q. The highest limit being what?

A. Why, generally the highest limit is $3 an acre, generally. Corn land is from $1.50 to $3.00 an acre. Pasture is from $1.00 to $2.00 an acre. Those considerations are sometimes made a part of the consideration in farming the land, not as a full
3059 value consideration.

Q. That is, what factors are taken into account? For instance, when a man lets out some corn land at a cash rental?

A. If he is on the land, if he is farming the land, it is taken into consideration, sometimes, in putting it on certain parts of the land to clean it up, as you might say.

Q. To restore the land?

A. To restore the land.

Q. And it is figured as part consideration with the crop rental plan, you mean?

A. Yes, sir.

Q. How about the pasture as a factor in the part consideration?

A. That is land, perhaps, that has been seeded down with the idea of giving it a rest from grain raising, and that is a part consideration by resting it giving it a chance to rest and giving the tenant a chance to raise stock, to get the fertilizer to use on the ground for raising grain.

Q. And to what extent does some hay land sometimes, when situated on the same premises where cereal crops are raised in addition, form a consideration of this rental plan?

A. Comes in on the same basis as the pasture land, let for the same reason.

Q. When you have land that is all hay and used for hay purposes, what do you state to be the fair and usual value for good upland hay per acre?

A. $2.50 to $3.00 an acre.

Q. Do you know what kind of hay they raise on the hay land here?

A. Yes, sir.

3060 Q. What is it known as?

A. Part of it is known as upland hay and part of it midland hay and part of it is quarter lowland.

Q. What is the difference? What is good upland hay? Is that good hay?

A. That is good hay.

Q. Now, are you acquainted with the land known as the Kentzleman land? West half of section 32, 129-47?

A. Yes, sir.

Q. Where did he live?

A. No, sir, I can't recall that name just now, but some time ago the party who owned it as I remember it, lived in Iowa, I can't recall the name of the town.

Q. Mr. J. M. Kentzleman?

A. Yes, sir.

Q. One of these parties, you say this party, was up to see you?

A. The owner of the land, whatever his name was, called to see me here, Oh, a year or two years ago.

Q. Is this land hay land?

A. Just hay land and pasture land.

Q. Was that flooded in 1916?

A. Nearly all flooded in 1916, the south part of the west half; the west half of the southwest, there is an abrupt rise of the land, and of course that wasn't flooded.

Q. About half of it flooded?

A. Nearly all flooded, there was three quarters of it that was flooded.

Q. In 1916?

A. 1916.

3061 Q. How near so much in 1915?

A. No, there wasn't much in 1915.

Q. What kind of hay did they raise on it?

A. The most of that is upland pra-rie hay.

Q. Over half of it?

A. No, I will withdraw that answer. There is about, Oh, about a third of it is upland, would be considered upland pra-rie hay.

Q. About how much midland, if you use the term midland?

A. Well that that wasn't in hay was used for pasture.

Q. And your rental value you stated, would apply to this upland hay of $3.00 per acre.

A. Yes, sir.

Q. What would be the fair rental value of that pasture land?

A. Well, part of that was in a market draw or water way, quite a marked water way, I think down on the east side of it. I have never been over on the east side of the land. I should imagine that one dollar an acre would be a fair rental value for the pasture land.

Q. For the pasture land?

A. Yes, sir.

Q. You know Mr. Erickson who lived on the west half of the east half of section 33, township 129, Range 47?

A. Yes, sir, I have met him.

Q. And you know how long he has lived there?

A. Why, I don't know how long he has lived there, I know he was there before I—I am quite certain he was there before I came to this country.

Q. Do you know how these flood conditions of 1915 and 1916 have affected him?

3062 A. Yes, sir I knew he was unable to farm his land.

Q. Do you know whether or not he had to move on account of these flood conditions?

A. Yes, sir, he moved out for a while at least during the year 1916.

Q. Do you know to what extent this land has been used or cultivated or farmed prior to 1915?

A. It was nearly all, had been cultivated, was cultivated.

Q. I want to ask you also about land in section 15, township 129, range 47, the Divitt and Purcell land, formerly Great Northern land, you are acquainted with that land?

A. I have been past it a great many times.

Q. There are some fractions shown in section 15 aggregating some 68 acres, lots 1, 2 and 3 can you state whether or not that is hay land?

A. Well, all of that that is used for anything is hay land.

Q. Do you know whether or not that was flooded in 1915 or 1916?

A. It was.

Q. Erickson, as I understand you, did not crop this land in 1915 or 1916?

A. He had no crops, I believe in 1916 at all. He was away, he moved away he was part of the time in 1916.

Q. In 1915 do you know how much he lost?

A. No, I don't know how much he lost in 1915.

Q. Was it flooded in 1915 or 1916?

A. It was flooded in 1916 so that he moved off.

Q. And you don't know just how much it was flooded in 1915?

3063 A. I don't know just how much it was flooded in 1915, I don't recall.

Q. Mr. Palmer has spoken about several of the witnesses in this proceeding asking them about patentee- and original homesteaders coming on some of these lands in Fairmount township and staying a few years and then apparently moving away, and going elsewhere, and not being on the land now. Is that in your experience, that situation, if it be a situation, anything peculiar to this territory?

A. That condition applied to this territory.

Q. And what other territories generally?

A. Well I know that in the northwestern part of the State, up in Ward county, the parties who homesteaded were not the fellows who stayed and farmed the land any length of time. This land, as I understand it, began to be settled up in 1879, 1880 and in 1901, when I came here there was very few of the fellows who homesteaded the lands here.

Q. The condition of patentees, if it be a condition, in not staying forever on the land, is not a condition peculiar to this territory, then, is it?

A. I don't believe it is.

Q. It happens, frequently, doesn't it, to all pioneer territories?

A. I have heard it stated it does, and I have seen it that is why I mentioned Ward County, because I saw it.

(Recess is taken until 1:5 p. m. Nov. 15, 1917.)

3064 Nov. 15, 1917, at 1.15 p. m.

Cross-examination.

By Mr. Palmer:

Q. Do I understand you to say that in the government quadrangle this land along these Bouis de Sioux flats, is known as Red River valley land?

A. Yes, sir, it is.

Q. I understand you to say that it is so designated on plat 25 of the monograph of Dr. Upham?

A. It is so designated in the monograph #25.

Q. On the contrary is not substantially this entire area of flooded land designated on Mr. Upham's monograph as a lake surface?

A. Not at present. It was designated as lake Agassiz centuries ago.

Q. Yes, but I mean the present monograph of it shows this area as substantially a lake surface in blue shading dosen't it?

A. No.

Q. On monograph #25?

A. No, it shows the whole Red River valley tributary to the Bois de Sioux and Red river as part of the Red river valley with different shadings, of course, as to different soils.

Q. I call your attention to defendant's exhibit No. 74, being a government quadrangle of these lands in question, and I want to ask you particularly about the west half of section 32, of which you have spoken; that shows upon this quadrangle, the southern half of it, to be practically a lake or slough, is that correct?

3065 A. Well, part of it is a slough as shown on the map?

Q. You don't mean to include that in the hay or pasture land of which you have spoken, that slough?

A. No, sir.

Q. That is open water, there is about 40 acres there of open water, isn't there?

A. It isn't covered with water all the time.

Q. Ordinary years?

A. No, ordinary years it is not covered with water.

Q. Is it in the spring?

A. Many springs.

Q. Isn't there water in there now, in this dry season?

A. There is very little water, except in the lower water ways.

Q. Now, since we are going on this government quadrangle, practically the entire west half of section 32 is shown to be a swamp on this quadrangle, isn't it?

A. It is shown there, it seems to be, I imagine that is what it is supposed to be, I don't see the designation.

Q. That is the marking that usually designates a swamp or marsh, isn't it?

A. I don't know that those markings are usually used for that.

Q. I took from what you stated that you were quite familiar with this government quadrangle.

A. I am not familiar with all the government quadrangles, I have seen some plats, maps and monograms.

Q. Let's look at this Red river valley land you spoke of, and assume that these are the proper markings for marsh land;
3066 practically the whole of that west half of 32 is designated there as a marsh?

A. I see it is, but that is wrong.

Q. You haven't any great confidence, then, in the government quadrangle?

A. If that is a criterion to go by, I have not.

Q. The east half of that same section, particularly the southeast quarter, is designated as a marsh?

A. Yes, sir.

Q. I suppose that is wrong?

Mr. Bronson: You mean if those designations refer to a marsh.

Mr. Palmer: That has been sworn to here; that is wrong too?

A. No, that is not wrong.

Q. That is a marsh, then?

A. That is partially what we term "low", by the reason there are several draws through there, marked waterways.

Q. Let's go on up into Section 29, there is practically a marsh extending clear across the west half of this section, too isn't there?

A. There is a waterway extending across one corner of it.

Q. One corner?

A. Yes, sir.

Q. It is indicated here on the government quadrangle as extending clear across and on into Section 20?

A. It does not.

Q. That is wrong too?

A. That is wrong.

3067 Q. And section 20 here, nearly through the west half of section 20 there appears to pass a waterway of a marked character, is that wrong too?

A. That is partially wrong.

Q. Is there any of it there that is right? Did those government surveyors get anything right at all?

A. They probably did. There is a small draw across there.

Q. Across where, what are you pointing to?

A. I am pointing to the northwest quarter of 20.

Q. That draw goes right on the northeasterly and goes across this southwest quarter of Section 17, of yours you have spoken of?

A. Yes, sir, right across one corner of it.

Q. And that continues on northeasterly across Section 17, and across 16 and joins the Bois de Sioux river over in Section 9, doesn't it?

A. Yes, sir.

Q. That draw or ravine up through there is the western outlet of Traverse Lake, isn't it?

A. It is not continuous.

Q. It is not continuous?

A. No, it is not continuous, and that draw up across 20 is not an outlet of Traverse Lake.

Q. Where does the water come from that gets in there?

A. The water comes down from the northwest.

Q. Then the water that comes down into the draw on your land comes down from the west, on your land in 17, northwest?

A. The water that comes in 20, some water comes down through there, and there is another draw that comes up from the south through there.

3068 Q. I am asking you where the water came from that came onto your land, the southwest quarter of 17?

Mr. Pinkney: What year?

Mr. Palmer: Any time.

Mr. Pinkney: We object to "any time" as immaterial and irrelevant.

Mr. Palmer: Where does the water come from that is on your land?

A. Sometimes it comes from the south and sometimes it comes from the—I suppose it comes from the east. It was hard to tell where it came from some years, because the water was so high.

Q. Some of it, at least, came from the northwest into 20, and then on into your land through this draw didn't it?

A. Yes, sir.

Q. And there are several public ditches in there, ditch into that ravine that comes into the west side of 20, isn't there?

A. No, sir, not that I know of.

Q. There are not any ditches there at all, to your knowledge?

A. Road ditches.

Q. No public ditches, no county ditches?

A. There are no county ditches that lead into it there.

Q. There are some road ditches?

A. There are road ditches.

Q. Isn't this the same draw that comes up from 20 that runs across Section 17?

A. Yes, sir.

Q. I take it it was that draw that got full of water during these times of flood first?

3069 A. Well, when the flood was on the lowest land was covered first.

Q. Where was the lowest land?

A. On the southeast on 17—129—47.

Q. Southwest of 17?

A. The southwest of 17—129—47, the lowest land was on the east side.

Q. Right where it is indicated on this government quadrangle?

A. Yes, sir, right there.

Q. You say some of that water came down from the northeast onto your land?

A. No, I said that it perhaps came from this direction or came from the east down in the road ditches along here. I didn't say that, but I do now. I will say now that it appears now to back up and come from the east, the road ditches were at least full.

Q. There is another ravine that comes in from the west and the northwest into Mr. Taylor's land in section 5 isn't there?

A. Yes, sir.

Q. There are several public ditches in that over to the west?

A. Yes, sir, there is a county ditch leads into that.

Q. As I understand it then, the water came down from the west and struck this road on the east line of section 5, and then ran down to the south and came down this draw into your land?

A. I don't know that the water came down from the north down the road ditch.

3070 Q. You know that it did not?

A. No, sir.

Q. You didn't observe as to whether there was any water that came down on your land from the northeast?

A. There is no means of telling whether that water came down, or came from the north.

Q. You don't mean to say Mr. Abbott, that in your best judgment the water that came onto your land came clear from the Bois de Sioux River over onto your land?

A. I mean to say that the rise of the water south of here was the cause of that land being flooded.

Q. And the water ran, then, southwesterly onto your land from the river?

A. I don't say positively, I say possibly it came from the north running southwest, or possibly came from directly east some of it surely came from the south.

Q. Came from the south, and some that came from the west, didn't it?

A. No, sir, none came from the west.

Q. None came from the west?

A. It came in a round about way, possibly a little of it.

Q. Take section 28, is that a good $85 an acre land?

A. No, it it not; that is, I wouldn't so consider it.

Q. You haven't that for sale, or your company hasn't it?

A. Not now.

Q. Did you ever have it for sale?

A. Yes, we had it several years ago.

Q. At what price?

A. Well, sir, I don't remember. I don't remember the

3071 price we had on it.

Q. Do you remember what price you got?

A. No, I don't.

Q. Did you get as much as $75 an acre?

A. I am not prepared to say, I can't remember.

Q. The southwest quarter of section 28 is shown here on the government quadrangle to have a lake on it, or large slough is that correct?

A. There is a low strip there on the southwest quarter.

Q. Practically the entire north half of section 28 is shown to be a marsh?

A. No, I want to withdraw that statement as to the southwest of 28. I never had anything to do with the southwest of 28—129—47. I had in mind the northwest quarter of 28.

Q. I have referred to the whole of section 28. Tell me about the northwest quarter of 28.

A. The question I answered there supposedly for the southwest of 28, would refer, would apply to the northwest of 28.

Q. All of the northwest of 28 appears to be designated on this quadrangle as a marsh?

A. Yes, sir.

Q. Is that wrong?

A. I wouldn't consider it a marsh.

Q. Is it not even low?

A. It is not high land, no. I have seen it farmed, a good share of it.

Q. When did you see it farmed?

A. Oh, several years ago.

3072 Q. Been farmed right along every year, good Red River valley land?

A. No, it wasn't farmed every year.

Q. Take section 21, right through the middle, the whole middle part of section 21, appears upon this quadrangle to be designated as a marsh, is that wrong?

A. Well, I wouldn't consider it a marsh. There is a marked water way runs through near the middle of section 21, or on the west half.

Q. That is a water way that comes up also from Lake Traverse and flows on into the Bois de Sioux river?

A. The fall is to the northeast, I suppose.

Q. Take section 33, the east half of the east half, that is the Baker land, did you sell that to him?

A. No, sir.

Q. Do you know anything about that?

A. Oh, I have frequently seen it in years past.

Q. Now that appears to be designated here as largely very low land. Overflow land, is that correct?

A. No, I don't consider it what you term marsh land.

Q. You take all along the Bois de Sioux river, so far as it is shown on this quadrangle, there appears to be a strip on each side of this that is designated here as low and marshy. Is that wrong?

A. There is more or less narrow strips on both sides that is used as hay land.

Q. Hay cut there every year?

A. I don't know as it is.

Q. I call your attention to this Divitt and Purcell land that you have spoken of in 15, these government lots 1, 2 and 3 that are shown here to be all low and marshy land, that is wrong, too,

3073 isn't it?

A. I don't consider in all marshy land. There are several draws across there touching it and running across there, and the balance I would consider as mid-land or up-land prairie hay.

Q. Has any of this piece of land ever been broken?

A. Not to my knowledge.

Q. Never had a plow on it to your knowledge.

A. Not to my knowledge. I never had anything to do with it, and therefore didn't watch it closely.

Q. You testified about it; didn't you know anything about it, when you testified about it?

A. I did, because I drive past there frequently and see it.

Q. You say it never had a plow on it?

A. Not to my knowledge.

Q. Ever had any buildings on it?

A. Not to my knowledge.

Q. Any fences?

A. Not that I know of.

Q. Any groves or orchards?

A. Not that I know of.

Q. Never was improved in any manner, to your knowledge?

A. Not to my knowledge, no, sir.

Q. You call that hay land?

A. Yes, sir, I do.

Q. What does it rent for per acre?

A. I don't know.

Q. When did Purcell and Divitt get it?

A. I have in mind when they bought it, but I can't tell the date, so I don't know.

3074 Q. Do you know what they paid for it?

A. No, sir.

Q. Do you know anything about it, what it ever sold for in the world?

A. No, sir, I know the Great Northern Railway had it for a number of years, quite a number of years.

Q. Where are Purcell and Divitt, the owners?

A. They were at that time at Wahpeton.

Q. Aren't they there yet?

A. Purcell is there, Mr. Divitt is not.

Q. Mr. Purcell is there?

A. Yes, sir at Wahpeton.

Q. Well, now, here is the east half of the east half of 16 that appears to be all designated there as low, marshy land, what about that?

A. I don't consider it all low marshy land.

Q. I say, the east half of the east half?

A. No, I don't consider that all low, marshy land.

Q. That is good Red River valley land?

A. I don't know what you term good Red River valley land.

Q. That is what I am trying to find out. What you term Red River valley land; it don't make any difference what I term it.

A. I should say it is good soil; that there are water ways across there, and that the most of it is hay land.

Q. Ever been broken up?
A. Not to my knowledge.
Q. Been improved in any manner?
A. Not to my knowledge.
3075 Q. Do you know what it has ever been bought for or sold for?
A. I don't know.
Q. What do you know about the market value of these lands?
A. Because I have seen lots of them sold.
Q. You give the market value in 1915 as $65 to $85 per acre of these overflowed lands?
A. Yes, sir, I did.
Q. You tell me one piece of land in that overflow area that has ever sold in the history of the world to your knowledge for $85 an acre.
A. Well, I am not in position to state any particular piece just now.
Q. Do you know of any land in that overflow area that was ever sold for $85 an acre?
A. Yes, sir, I do.
Q. Now, tell me one piece, and whom it was sold to and when?
A. I say, I repeat, I am not in position to state.
Q. Did you ever know that?
A. Yes, sir.
Q. You have forgotten it?
A. Yes, I haven't it in my mind.
Q. Completely gone out of your mind, Mr. Abbott?
A. It is.
Q. When was this $85 an acre sale made?
A. I can't recall that either, I can't state the time.
Q. You have in your mind somewhere a recollection of some of this overflow land having been sold at $85 an acre?
3076 A. Yes, sir, I have.
Q. You can't tell when it was sold, can you?
A. No, I am not in position to state.
Q. Is there anything confidential about it, so you dare not state it?
A. Now particularly, no.
Q. Do you recollect when it was?
A. No.
Q. Do you recollect where the land was, or about where it was?
A. No.
Q. Do — recollect who sold the land at that figure?
A. No, I don't.
Q. Do you recollect who bought the land at that figure?
A. No, I don't.
Q. Can you call to mind anything about where the purchaser lived?
A. No.
Q. Or where the seller lived?
A. No.
Q. You recall the incident of it having been sold, you say?
A. Not the particular incident, no.
Q. You have it in your mind somewhere, haven't you?

A. Yes, I have it in my mind that there was—that some of that flooded land has been sold for that price.

Q. Now, just where did you get that impression, do you recollect?

A. No.

Q. Or how you got it?

3077 A. No, from recalling something of sales that have been made in past years.

Q. Well, sales that have been made where, in this flooded territory?

A. Yes, sir, in this flooded territory.

Q. Do you think you had anything to do with that sale?

A. I can't recall now whether I did or not.

Q. Now, I wish you would tell me a piece in this flooded area that has been sold at $65 an acre?

A. Well, I am not in position to state that either.

Q. Can't recollect it?

A. No.

Q. Can't recall what land it was?

A. No, I am not in position to state.

Q. Or who bought it?

A. No.

Q. Or who sold it?

A. No.

Q. That is all gone out of your mind?

A. Yes, that is as to the definite incident of transaction.

Q. Now, I presume your recollection as to the crops raised upon the land in this flooded area is just about as distinct and definite as your recollection as to the values and sales?

Mr. Pinkney: We object to the form of the question.

Mr. Palmer:

Q. Is your recollection as to the crops upon this Red River valley land that was flooded in 1915 and 1916 just as distinct and vivid as your recollection of sales and values?

3078 A. I have the figures on some of the crops.

Q. You have the figures on this land of Schouweiler's?

A. Yes, sir.

Q. Have you figures on anything else?

A. Yes, sir, I have figures on several pieces.

Q. You have the figures on these pieces that you gave testimony to here?

A. Yes.

Q. Southwest quarter of section 17, you say, is owned by your land company?

A. That is owned by the Crandall, Flynn and Tuttle Land Company.

Q. Is that the land company with which you are associated.

A. That is the land company with which I was associated.

Q. You are not associated with them now?

A. Only looking after lands that they own partly.

Q. When did they get this southwest quarter of 17?

A. Why, I can't state definitely. I think it was in 1915, fall of 1915, sometime in 1915.

Q. What did they pay for it?

A. I don't know.

Q. Whom did they get it from?

A. They got it from a man by the name of Kennedy?

Q. Where did he live?

A. Illinois.

Q. How long had he had it?

A. I can't recall.

Q. Whom did he get it from?

A. I don't know.

3079 Q. What did he pay for it?

A. I don't remember that.

Q. Did you have anything to do with the acquisition of this piece of land by your company?

A. No.

Q. And you have no information whatever about their acquisition of it?

A. No, sir.

Q. How long have you looked after the southwest quarter of 17?

A. I started looking after it in 1915, sometime in 1915.

Q. And you say that the returns in 1915, were about $700?

A. About $700.

Q. And there was a tenant on it by the name of Wasson?

A. No, that was where I made a mistake. The tenant on the southwest of 17, his name was Vohnson.

Q. How long had that tenant been on there in 1915?

A. I think he had been on there for at least a couple of years before, perhaps longer.

Q. Where is he now?

A. He is living on the land, or not living on the land, he is farming the land, living near there.

Q. Now on that quarter section in 1916, you say there were 60 acres that were too wet to cultivate?

A. There were,—that is, there was more than 60 acres that was too wet to cultivate, about, I think I stated about 80 acres.

Q. Now, 1916, was an extremely wet year, wasn't it? In this section.

A. There was quite a heavy rainfall.

3080 Q. There were many quarter sections of land entirely apart from any land in this Bois de Sioux valley that had 80 acres too wet to cultivate, did they not?

A. There were some lands that were wet by reason of its individual location, height or lowness.

Q. And to the extent, many quarters, of one half being too wet to cultivate, would you say?

A. No, I wouldn't say many quarters, I would say a few.

Q. What was the character and value of these 80 acres in 1916? To rented for cash.

A. Well, part of it was rented for cash, and part of it was rented on a grain basis.

Q. Didn't get any grain on this 80 acres?

A. No, sir.

Q. Then there were no returns on a grain basis?

A. No, but part of that 80 acres is pasture.

Q. What did that pay for 1916?

A. We collected, I think it was $37.00.

Q. Cash rental?

A. Cash rental.

Q. Well, what did it rent for in 1914 on a cash rental basis, the pasture?

A. I didn't collect the rental in 1914. In 1915, as a part consideration for renting other lands, that was rented for $90 I believe.

Q. How much an acre?

A. Well, taking it roughly, at that time, about $1.50 an acre.

Q. Now, what could ordinary farms of this character be rented at cash rental for in 1916?

3081 Mr. Pinkney: We object to that, as it doesn't appear from the evidence that any such lands were rented on that basis at all.

A. I am unable to state what the southwest of 17 could be rented for in 1916 on a cash basis.

Mr. Palmer: I asked you what similar farms were rented for in this locality on a cash basis in 1916.

A. I don't know of any farms that were rented for cash basis.

Q. You don't know of any lands or any farms having been rented for cash in this locality in recent years?

A. I can't recall any entire farms that have been rented for cash.

Q. Either inside of outside this Bois de Sioux valley?

A. No, I don't know of any farms that have been rented for cash.

Mr. Bronson:

Q. By that you mean cereal lands?

A. I mean the entire farm cultivated hay land or cereal land.

Mr. Palmer:

Q. And you testified here in regard to Mr. Edward Erickson's land, west half of the east half of 33, does Mr. Erickson live on that land now?

A. He was on there about three months ago, was doing some work on there.

Q. So far as you know, he is there?

A. So far as I know he is there.

Q. Is it at his request that you have testified here in regard to his land and his crop values?

A. No, sir.

Q. You haven't seen him here yourself?
3082 A. I haven't seen him myself.
Q. This Mr. Nagel, you say he owns the southwest of 8?
A. Southeast of 8-129-47.
Q. Where did you say he lived?
A. He lives in Illinois.
Q. Did you sell him this land?
A. The Crandall, Flynn and Tuttle Land Company sold him that land.
Q. When?
A. Well, I am not sure, but I think it was in 1911, or 1912.
Q. Those were dry years?
A. Well, I don't know that they were, could be designated dry years particularly. There were, as I recall them, they were ordinary years.
Q. What did the land company get for the land?
A. I can't recall that.
Q. You can't recall anything about that?
A. No.
Q. Was it a trade or cash sale?
A. I don't know that.
Q. How long had the land company had it before they sold it to the man of Illinois?
A. I can't recall that either.
Q. This water on the southeast of 8, Mr. Abbott, that was water largely which came in from this waterway to the west, and this water way, and ditches to the west, wasn't it?

Mr. Pinkney: We object to that as not being a statement of the witness.

3083 A. No, I think not, I feel sure it is not.

Mr. Palmer: Where did it come from?
A. It was by reason of the overflow from the east.
Q. The water overflowed from the east and ran to the east there?
A. Overflowed from the east, overflowed toward the west.
Q. The flow was westward?
A. Well, I- wasn't the flow, it was a raise.
Q. The raise was to the west?
A. Simply raised and covered the land.
Q. There wasn't any water, I take it, in the ravine and water way to the west in 1916?
A. You are talking about the southeast of 8?
Q. Yes.
A. There is no ravine or water way on the west of this land.
Q. Isn't there any on the west side of section 8?
A. No.
Q. Absolutely none?
A. Only simply a very small road ditch on the side of the grade, made by throwing up the grade.

Redirect examination.

By Mr. Bronson:

Q. In the floods of 1915 and 1916 as you observed them, state whether or not the flood waters that overspread these lands that you saw come up gradually during the seasons of 1915 and 1916 and overspread the lands, the waters came from the south?

A. The water came, where there was a depression, a
3084 marked waterway, it came up from the south in those water ways and spread out where there was no marked water way, such as there is not close to the southeast of S. it simply spread out generally from the east.

Q. You have been down to Lake Traverse several times?

A. Yes, sir.

Q. And down to White Rock?

A. Yes, sir.

Q. You are familiar with this valley?

A. Yes, sir.

Q. You had a flood in 1915, and 1916?

A. Yes, sir.

Q. And where did those waters come from?

A. From the south, that is, they came from the south down there.

Q. From Lake Traverse?

A. Yes, sir, of course that is where the waters came from.

Q. And it was very apparent, wasn't it, that these flood waters that overspread these lands were waters that came from the south?

A. Yes, sir, that was where the water came from, however, in speaking as in coming from the east, I mean that the water that had come from the south gradually raised until it backed up to the west. The water that caused the damage of course came from the south.

3085 HARLAN B. PARSELL, being sworn in behalf of the complainant, testified as follows.

Examined by Mr. Bronson:

Q. State your age, and how long you have resided in Fairmount township?

A. Fifty years old, I have been here, this is the ninth year.

Q. You may state whether or not you have looked after for some years, the southwest quarter of section 15, township 130 Range 47 in said Fairmount township, consisting of about 154 acres?

A. I have.

Q. You may state whether or not your father-in- law J. A. Ennis of Elmwood, Illinois is the owner?

A. Yes, sir.

Q. Has he owned that for about 7 years?

A. Something like 7 years.

Q. What did he pay for it when he got it?

A. He paid $7,000 for the quarter.

Q. Was it broken up, all of it, during the year he bought it?

A. Yes, sir, it was all broken except 60 acres, that was broke in the fall that he bought it.

Q. So that the next year it was all broken up?

A. Yes, sir.

Q. You may state whether or not this land has produced and raised crops upon the same that have been marketed every year up until the year 1915?

A. Yes, sir, as long as I have had anything to do with it.

3086 Q. During the years your father-in-law has owned it?

A. Yes, sir.

Q. What is the character of the soil?

A. It is a black loam a rich soil.

Q. You may state whether or not on this land during those years you raised crops of wheat, barley, oats and flax?

A. Yes, sir, raised all of them.

Q. Now in the year 1913, you may state whether or not some flax was raised on this land?

A. There was 60 acres there.

Q. And what was the share of your father-in-law for the crop of that year, in dollars?

A. It netted him about $500.

Q. That is on half shares?

A. Yes, sir.

Q. 1915, was this land put into crop?

A. Yes, sir, it was.

Q. And into what crops?

A. There was oats and wheat.

Q. Tell the number of acres of each.

A. 20 acres of corn; 40 acres of oats, 40 of barley and 54 acres, I believe of wheat, something like that.

Q. Was it flooded in 1915?

A. Yes, sir.

Q. How much of it?

A. All of it.

Q. And before the flood condition occurred—which was sometime in what month?

A. In July, along about the 20th, I should think, the water came in.

3087 Q. How did the crops look?

A. They was all headed out.

Q. The barley and oats and wheat?

A. Yes, sir.

Q. How did the corn look?

A. The corn was, oh it was over knee high, the way we measured it.

Q. What sort of a promise was there of a crop of barley, wheat, oats and corn?

A. The small grain, the show was good.

Q. Looked good?

A. Yes, sir, it looked good.

Q. You may state whether or not the crops that were planted

and were in that condition when the flood came on in 1915 were destroyed by this flood, if you know?

Mr. Palmer: That is objected to as not within the bill of complaint in this case.

A. It was no good, it wasn't worth cutting.
Q. Water on it, was there?
A. Yes, sir, from 6 inches to 18 inches of water.
Q. Did the water destroy it?
A. Scalded it, I would say it was destroyed.
Q. It was not hail, or something else?
A. No, sir.
Q. Have you computed the value of that crop on that land for that year at the time it was destroyed?
A. Yes, sir.
Q. State your computation?
A. Well, the total crop figures $2,748.60.
Q. Give the items of it?
3088 A. The wheat, $1,128.60; oats $720, barley $900.
Q. What did you figure the yield of the wheat?
A. Figured that at 20 bushels.
Q. And the price?
A. 95¢.
Q. And the oats?
A. 40 bushels 45¢.
Q. And the barley?
A. 30 bushels 75¢.
Q. The value of the total crop you state to be $2,748.60?
A. Yes, sir.
Q. What deductions did you make?
A. I made a deduction of $228.
Q. Consisting of what items?
A. That is putting in of the crop, 154 acres, $67.
Q. That is harvesting, you mean?
A. Yes, sir.
Q. Go ahead, twine.
A. Twine was $29.48, threshing of wheat, $96, oats $60 and barley $72, $228.00.
Q. Now, this land, this year of 1915, was it let out on a crop rental basis?
A. Yes, sir, on halves.
Q. To whom?
A. To Grover Williams.
Q. That is, under the crop rental basis, the landlord furnishes the seed and paid half the threshing bill?
A. Half the threshing bill, yes, sir.
Q. The corn land, how was that let out that year, to the tenant?
3089 A. $2 an acre.
Q. In ascertaining, then, the owner's share of this crop what would his share be net after making all deductions?

A. *How* share would be $1,300.30.

Q. That is, deducting the threshing bill and adding $40 for the corn?

A. Yes, sir.

Q. That would be, if I understand you, the value of this crop so destroyed by these flood conditions of 1915 at the time they were destroyed, the owner's share thereof?

A. Yes, sir.

Q. Including this corn you stated, at $2 an acre?

A. Yes, sir.

Q. The tenant's share for that year, making the deductions you have computed at what figure?

A. $1,133.82.

Q. The corn land you figured of what value?

A. At $140.

Q. That would be $7 an acre?

A. Yes, sir.

Q. Less the $40?

A. Leaves $100.

Q. Leaving $100, net?

A. Yes, sir.

Q. Which would make the total?

A. $1,233.82.

Q. This would constitute the value of the share of the tenant in these crops *do* destroyed in the year 1915?

A. Yes, sir.

Q. In making this computation you may state whether or not you have taken the average yield and the market price in accord-
3090 ance with season conditions as this crop promised at the time it was destroyed by those floods?

A. Yes, sir, I did.

Q. Now in 1916 you may state whether or not these lands were flooded?

A. Yes, sir, they were.

Q. And whether or not they were unable to be cropped or used for any farm purposes on account of these floods?

A. Couldn't be cultivated at all.

Q. Whether or not they laid there, uncropped and unused in the season of 1916?

A. They did.

Q. You may state what the rental value for the use of those presises for the year 1916, if they had not been subjected to these flood conditions?

A. About $600.

Q. You may state whether or not in the year 1917, these lands were unable to be cropped and used for farming on account of those flood conditions?

A. They was partly farmed.

Q. And what use were you able to make or have made of these premises in the year 1917?

A. There was 15 acres, I should think, cultivated and put in.

Q. And what did you rent that at, those 15 acres?
A. That was rented at $2 an acre.
Q. That was all the returns for the year 1917?
A. Yes, sir.
Q. You may state what you compute then, the value of the use of the premises for 1917, remaining as they would have been
3091 if not subjected to the flood conditions?
A. Well, all that was got off that quarter was the $30.
Q. Therefore, state what the rental value for the year 1917, for the remaining land, that was not capable of being used, was for the year 1917?
A. Well, do I understand what it would have been worth if we could have farmed it?
Q. Yes, less the $30?
A. $750.
Q. What was the market value of these lands before the flood conditions per acre?
A. About $50.
Q. To what extent has the market value of these lands been impaired by those floods, if you know?
A. I should judge $25 an acre, maybe more.
Q. I show you exhibit 40 purporting to be a photograph of the Ennis land, and ask you to state whether or not these lands were grown up to a growth similar to that disclosed by the photograph?
A. Well, yes; I don't see the tails on them, but they were covered with cat-tails and water grass, such stuff as that, three to four feet high.
Q. These lands were so covered?
A. Yes, sir.
Q. What do you state to be the cost of restoring these lands so damaged or so flooded in the years 1915, 1916 and partly 1917 to their former condition of cultivation and tillability, and ability to be farmed as they were before the flood conditions?
3092 A. It would cost $5 an acre.
Q. You think it would cost $5 an acre?
A. Yes, sir, besides the loss of the use of the land for one year, it has got to lay one year.

Cross-examination.

By Mr. Palmer:

Q. What land did you farm?
A. I farm my own land southwest of town here.
Q. What is the description of it?
A. Southeast of 30, Fairmount township.
Q. You own a farm, the southeast quarter of 30, 130, 47?
A. Yes, sir.
Q. What were the net returns from that land in 1916?
A. Of my own?
Q. Yes?

Mr. Bronson: Objected to as improper cross-examination.

A. Something, I couldn't just exactly tell to a dollar, or anything like that, I didn't keep track of that, I spend it about as fast as I get it. I judge it was about $600 or $700, that is all in 1916.
Q. What did your wheat go an acre?
A. I didn't have no wheat.
Q. In 1916?
A. No, sir.
Q. What did your oats go?
A. About 35 bushels.
Q. 35 bushels to the acre in 1916?
A. Yes, sir.
3093 Q. How many acres did you have?
A. I had 20 acres.
Q. What did your barley go?
A. I had no barley on at all.
Q. What did your corn go?
A. Corn, I cut it up for fodder, I always do.
Q. What other crops did you have?
A. I have 100 acres in hay and grass, hay and pasture land.
Q. I apprehend the use of that was worth about $3 an acre?
A. Yes, it is all of that.
Q. You live on your land?
A. Yes, sir.
Q. And that land of Mr. Ennis' up in 15 has no buildings?
A. No, sir.
Q. You keep stock on your land?
A. Yes, sir.
Q. And manure it from time to time?
A. When I have time, yes, sir.
Q. And I assume it is in a more productive condition than this land without improvements in 15?
A. Well, any land is where there is stock on.
Q. You say your returns from that quarter were between $600 and $700 in 1916?
A. Yes, sir.
Q. And you think the returns from this quarter up in 15 would have been $600 for 1916?
A. Yes, sir.
Q. How do you figure those returns for 1916?
3094 A. On a basis of the outlook of the crop standing there in the water.
Q. 1916 on the Ennis land, in 1916 you say you had returns of about $600 or $700 on your home quarter?
A. Yes, sir.
Q. You figured $600 returns on this land up in 15 for 1916?
A. Yes, sir.
Q. Do you think the returns from this land up in 15 would have been just as great without improvements or stock as they would down in your own land with better cultivation and the improvements and the stock?
A. Why, it looks like a person ought to get as much off a quar-

ter, it would be pretty poor of you couldn't get as much off a quarter as 60 acres.

Q. Haven't you got a quarter where you live?

A. Why, I only farm 60 acres, the rest is pasture or hay. I only got what the cattle ate of- of that.

Q. But the pasture is worth just as much where a man keeps stock, the returns are just as great to him, are they not?

A. It is worth what it would cost you to pasture your stock, yes, sir.

Q. You could have gone out and rented land at $3 an acre cash rental to take the place of this Ennis land, couldn't you, at $3 an acre?

A. I don't know. I never tried to rent any quarters for cash.

Q. You made no attempt to do that?

A. No, sir.

Q. 1916 was a wet year?

A. We had quite a bit of rainfall.

3095 Q. This land up in section 15, is that naturally somewhat more affected by wet conditions than your land?

A. It would drain itself just as well as my land will if the river ain't high. There is drainage there, it has a good fall.

Q. If the river is high, it has no drainage?

A. No place for the water to go.

Q. In a year like 1916 you would naturally expect the river to be high wouldn't you?

A. It ought to be able to take care of what water fell in this country on account of the banks there along the river in 15.

Q. Are the banks quite well defined along Section 15?

A. They are, I should judge, 8 foot high, anyhow at low water mark, when the water is low the banks are 8 foot higher than the bed.

Q. There at the Soo bridge, do you think the banks are 8 feet high?

A. Yes, sir, north of the Great Northern.

Q. I mean the Great Northern bridge; at the Great Northern bridge?

A. Yes, sir, this quarter lays north of the Great Northern.

Q. There at the Great Northern bridge do you think the banks of the Bois de Sioux River——

A. From there on north they begin to get more banks.

Q. But at the south line of this land, south line of the——what land lies east of the Ennis land?

A. A man by the name of Hanson used to own that.

Q. Speaking of that Hanson land do you think that the 3096 land at the south line of the Hanson land is 8 feet high on the Bois de Sioux river?

A. No, sir, not there.

Q. How high are they there?

A. I should judge 3 foot there.

Q. And when the river is full, does the railroad grade and bridge hold the water back there some?

A. It backs up in the ditches along there.

Q. And comes up on the south side of the railroad grade to reach this land?

A. No, it backs in on the north side of the railroad land.

Q. It appears to back in on there?

A. That is where the water comes in on this land.

Q. It appears to back down from the northeast?

A. It comes in over that tract of land that lays between the Ennis quarter and the river, comes over there.

Q. And which way does the water appear to come from, from the straight east or the northeast onto the Ennis land?

A. It comes in at the southeast corner of the land.

Q. But on the north side of the railroad grade?

A. Yes, sir, north of the railroad grade.

Q. Does it come straight west along the railroad grade, or does it appear to come from the north and go southwesterly?

A. It just simply raises up and spreads out. There is no run to it, it didn't run anyway that I could see, just backed up on there and lay there. As soon as the water was high, there was no flow at all, just lay there.

Q. The passage to the north appeared to be blocked in someway and the water stood there?

3097 A. No, sir, as quick as the water began to raise from the south, the water began to go off from the land.

Q. I thought you said while the flood was on the water seemed to back up there from the east right into the southeast corner of this land, and remain there without any perceptible flow, am I right?

A. Whenever the river raised, it would come up that much higher all the time.

Q. And at the time the flood was on, there seemed to be no perceptible flow of the water on this Ennis land?

A. I didn't notice it, there was too much there for me to go out and see.

Q. Was there considerable depth to the water there?

A. It was 18 inches to 2 feet deep, the deepest part of it.

Q. I believe your father in law lives in Illinois?

A. In Elmwood, Illinois, yes, sir.

Q. How long has he owned this land?

A. About 7 years.

Q. He got it about 1911?

A. 1911, I think, 1910 or 1911.

Q. Some of the dry years?

A. Those are the best years we have had up here; they wasn't very dry, as I could see, we had just rainfall enough.

Q. Whom did Mr. Ennis purchase the land from?

A. F. W. Reed.

Q. Where did he live?

A. He lived at Peoria, Illinois. He moved up in this country now.

Q. When did Mr. Reed buy it?

A. I think he had the land two years, if I ain't mistaken, something like that, before he sold it.

3098 Q. Have you any information as to what Mr. Reed paid for it?

A. No, sir, I don't.

Q. Or whom he purchased it from?

A. No, sir, he is a land man himself, has been a real estate man.

Q. You say Mr. Reed was a land man?

A. Yes, sir.

Q. And he had had the land but two years?

A. I wouldn't say positively whether it was two years, it might have been more, and might have been only a year.

Q. Have you any information as to the history of the land prior?

A. No, sir, I never saw the land until after he sold it to my father in law.

Q. What time did you get here?

A. I bought here in 1908.

Q. And from what point did you come from?

A. I came from Yates City, Illinois, that is about 2 miles from Elmwood.

Q. Has this land in section 15 ever had any buildings on it?

A. No, sir, not that I know of.

Q. At the time that your father in law got it, did it have any grove on it, orchards or fences?

A. No, sir.

Q. Had it been broken up?

A. Yes, sir.

Q. How much of it had been cultivated?

A. When he bargained for it, there was 100 acres of it broke
3099 and when he got his deed for it, the other 60 was broken.

Q. What year did you begin to look after it?

A. It was in 1912, I think.

Q. So in 1911, and 1912, 1913 and 1914, I presume that you got good crops on this land?

A. Yes, sir, it is good producing land.

Q. And then came 1915, which was a wet year through the crop season?

A. It was wet after the crop was partly headed out, that is, the water backed in there on that?

Q. It was a wet season, take it beginning from about the first of May down through May, June, July and August, 1915?

A. No, sir, not so wet, we had no trouble getting the crop in 1915.

Q. But I say, later, after the crop was in, the conditions were more wet than they had been in the years immediately prior and so on through fall, were they not?

A. It commenced later, that is, it wasn't in the early part of the season.

Q. Then came the rise of the river and the setting of the water back on this land?

A. Yes, sir.

Q. And that continued again in the spring of 1916, you say? And on through the season of 1916?

A. Well, it was so wet, the ground was soaked so thoroughly in 1915 that it was impossible to plow it hardly at all; there was a little that was tried to be cultivated in 1916.

Q. There was a fairly general failure of crops in this locality in 1916, on account of what conditions, wasn't there?

A. Partially so.

3100 Q. Do I understand you to say that this Ennis land is now on the market?

A. He will sell it, yes, sir.

Q. He has placed it upon the market?

A. No, he hasn't listed it with anybody.

Q. Is it upon the market at $25 an acre?

A. No, sir.

Q. And so far as you know it is not going to be, is it?

A. No, sir.

Redirect examination.

By Mr. Bronson:

Q. In 1916, farmers in this vicinity were affected by what is termed rust?

A. Yes, sir, there was some rust.

Q. And some wheat failed that had a good stand of straw?

A. Well, had some, I guess they call it the black rust.

Q. And affected the grain?

A. Yes, sir.

Q. What effect does rust have on wheat?

A. It shrivels it up, isn't a good quality, makes it light.

Q. That was the 1916 crop?

A. Yes, sir.

Q. Those conditions were quite general through the Red River valley, weren't they?

A. Yes, sir, as far as I know, that is as far as I have any chance to see, they was all about the same.

Q. And those rust conditions attacked firlds of rich grain as well as fields of poor grain, do they not?

3101 A. Yes, sir.

Q. High land as well as low land, do they not?

A. It doesn't make any difference.

Recross-examination.

By Mr. Palmer:

Q. At what time in 1915 was this crop on this Ennis land destroyed by the water?

A. The water came in there about the 20th of July.

Q. At that time what was the fair market value of the wheat standing in the field?

A. We never figure on anything until we get it in the elevator

here you can't tell, I never have figured on what it would be worth standing in the field. It cost us so much to get it off the field and through the threshing machine likes of that.

Q. Did you ever see any wheat sold in the field in July?

A. No, sir.

Q. Do you know anything about the fair market value of that barley as it stood in the field at the time it was destroyed?

A. $10 an acre standing in the field.

Q. What were the oats worth per acre standing in the field?

A. Well, that was, I should judge, worth as much as the barley, $10 an acre.

Q. Now, measured by the same standards have you some idea as to the value of the wheat standing in the field per acre as though a man were going to sell it at auction and go away?

3102 A. Well, I would say $15 an acre and that would allow a man $5 an acre to get it threshed and off the field.

Mr. Pinkney: Net?

A. Yes, sir, $15 an acre.

Redirect examination.

By Mr. Bronson:

Q. The way computations are made on wheat or oats or barley standing in the field, is ordinarily what the crop as matured delivered at the elevator will produce, is it not?

A. It is worth just what it will produce and be worth on the market less the cost of getting it there.

Q. For instance, if a hail storm had come along in July and you had insurance on that crop, you would have figured what the loss by reason of that hail storm was on that crop by what the wheat itself, as standing, if marketed and threshed, would have averaged per acre, isn't that correct?

A. Well, I don't know, they have adjusters to adjust them, I don't know how they work it. I paid for insurance against hail, and if it was a total loss, I got $500 a quarter.

Q. In other words a crop of growing wheat or oats or corn is valuable only when matured?

A. That is all.

Q. The value of that crop as standing at the time it was destroyed is to be computed by what would have been when cut, harvested, threshed and marketed, less the cost of doing so?

A. Yes, sir.

Q. That is the only fair method of arriving at it?

A. I would think so?

3103 Recross-examination.

By Mr. Palmer:

Q. If a man were going to sell out at auction and go away from his farm in July, and his crops were sold upon the market, any purchaser takes into consideration the element of risk, does he not?

Mr. Pinkney: We object to that as improper cross-examination and calling for a conclusion of the witness.

Mr. Palmer:

Q. Same as he would if he bought corn in the field?
A. He takes chances on it.
Q. And he takes out for the chance that he takes?

Mr. Pinkney: We object to that as incompetent and immaterial.

A. All fellows that sell stuff in this country sell it that way. They generally sacrifice a bit of money because they want to get away.

Mr. Palmer:

Q. Yes, and because the purchaser takes the risk——

Mr. Pinkney: We want to interpose an objection to this character of inquiry as wholly incompetent and immaterial.

Mr. Palmer:

Q. The seller sacrifices on it because the purchaser takes the risk?

Mr. Pinkney: We object to that as to the form, and also as immaterial.

A. I couldn't answer that. I don't know how you get at it.

Mr. Bronson:

3104 Q. You computed the fair value of those crops the best you could?
A. Yes, sir, to the best of my knowledge.

FRANK N. MCCONN, being sworn in behalf of complainant, testified as follows.

Examined by Mr. Bronson:

Q. Are you acquainted with the Nagel land, the southeast quarter of section 8, 129.—47?
A. Yes, sir.
Q. Do you know how much Mr. Nagel paid for that land?
A. I do not.
Q. Or what he sold it for?

A. I do not.
Q. And whom did you sell this land to?
A. To Mr. Will Denstedt.
Q. When?
A. In 1910, I believe.
Q. For how much?
A. $70 an acre.
Q. A question was asked Mr. Abbott concerning any farm being rented, a whole farm, for cash, in this territory. Can you state of any farm being rented in 1916 for cash?
A. I know of a farm that was reported to be rented at $4 per acre, I didn't see the lease, however.
Q. Whose farm?
A. Mr. Nick Rubish.
3105 Q. Where is that farm?
A. Section 6,—129—47. It was one quarter 80 rods wide, runs through the section.
Q. Northwest quarter and the west half of the east half of 6—129 47?
A. Yes, sir.

Cross-examination.

By Mr. Palmer:

Q. You said you sold this southeast quarter of 8 to Densdedt in 1910 for $70 an acre?
A. Yes, sir.
Q. How long had you had the land?
A. I had had the land a little over a year.
Q. What did you pay for it?
A. $40.
Q. You got it in 1909, about?
A. Yes, sir.
Q. For $40 an acre?
A. Yes, sir.
Q. And sold it to Desntedt in 1910 for $70?
A. Yes, sir.
Q. Was he from Illinois, too?
A. No, sir.
Q. Where was he from?
A. He was here when I came to the country.
Q. And living near this land?
A. He was living in Fairmount.
Q. What was his business?
3106 A. He was in the hardware business, hardware and furniture.
Q. Any improvements on the land?
A. No, sir.
Q. Any buildings?
A. No, sir.

Q. Was that a cash sale?

A. No, sir, I traded for a half interest in his furniture and hardware, paid him 100¢ on the dollar and 5% *per cent* added for freight.

Q. How much cash did he pay on the land?

A. There was some indebtedness against the farm, and he assumed the indebtedness.

Q. He assumed the indebtedness, turned in a half interest in his hardware and furniture?

A. Yes, sir, to me.

Q. And didn't pay any cash at all?

A. I believe not.

Q. How long did he keep it?

A. I couldn't tell exactly, some two or three years I think.

Q. And did he sell it to Nagel?

A. He traded it to the land company?

Q. Do you know what he got for it?

A. I couldn't say positively, but I think it was $70 an acre, $70 or $75.

Q. What did he trade it for?

A. He traded it for another farm, he traded his half interest in the hardware and furniture and this quarter of land for a larger farm.

3107 Q. Where?

A. I can't give you the description of it.

Q. Just generally?

A. It is down along the river here it is a mile east and a mile north of here where the buildings are, 434 acres.

Q. A mile east and a mile north of Fairmount?

A. A mile and a half north, I guess it is, and a mile east of the Catholic Grave yard.

Q. It is not on the river?

A. It is the Hanson farm.

Q. It is the J. T. Hanson farm the half section?

A. There is 434 acres in the whole tract.

Q. It would be the southwest of 10 and the northwest of 15?

A. I couldn't give you the description of it.

Q. What appears to be the land described as the Jens T. Hanson land?

A. Yes, sir, that is the land.

Q. Do you know what he took that land up there at?

A. Yes, sir.

Q. How much an acre?

A. $85.

Q. Did you say you had this land one year?

A. I will take that back, I will correct that, I believe it was $80 in place of $85, if my recollection was right.

Q. Whom did he trade it with, the land company?

A. Yes, sir.

Q. Do you know what the land company sold it to Nagel for?

A. No, I don't.

Q. Did you have it rented that year you had it?

3108 A. The Nagel quarter?
Q. Yes.
A. I farmed it for 6 years altogether.
Q. I thought you said you only had it about a year?
A. I owned it only a year. I farmed it 6 years.
Q. Did you live on it?
A. I owned the northwest of 8, and I lived there.
Q. Did you farm any of this land yourself the year you had it?
A. Yes, sir.
Q. Did you know of it being rented after you sold it?
A. No, I knew nothing about the price of it after that.
Q. Did Denstedt ever live on it himself?
A. No, there was never any improvements on it to my knowledge.

Redirect examination.

By Mr. Bronson:

Q. Did you raise crops on it during those years?
A. Yes, sir.
Q. What kind of crops?
A. Good crops every year that I farmed it.
Q. Cereal crops?
A. Yes, sir.
Q. This other Hanson land lies how far from the river, the Bois de Sioux?
A. I couldn't tell exactly, the buildings are about a mile, I think, or within a mile of the river there.
3109 Q. It would appear from defendant's exhibit 109 that the Hanson land is within half a mile of the river, is that correct?
A. A section if it lays close to the river, I couldn't tell whether it laid right up to the river, or whether there is a strip between that and the river. It lays not far from the river.
Q. Some of it perhaps within a quarter of a mile?
A. Yes, sir.

Recross-examination.

By Mr. Palmer:

Q. Is it ever reached by overflow from the river?
A. I couldn't say as to that.

Redirect examination.

By Mr. Pinkney:

Q. Mr. McConn, I call your attention to the Complainant's Exhibit 1, and to that part of the lands shaded yellow in said Exhibit, lying in the state of North Dakota, from the North Dakota line up as far as that shaded portion extends, and you may tell the court

whether you have a general knowledge of those lands from your residence in this locality?

A. Well, I have a general knowledge, yes, sir.

Q. Of the lands in a general way?

A. Yes, sir, in a general way.

Q. How long have you lived in Fairmount, or in the vicinity of Fairmount?

A. About 13 years.

3110 Q. You may tell the Court whether or not in those 13 years up to the year 1915 how it has been with the production of crops on these lands during the time you have known them from year to year?

A. It has been good, generally speaking.

Q. They have produced crops each year up to 1915, as far as you know?

A. Yes, sir.

Q. Have you known, during the time you have known these lands, a crop failure resulting from flood waters up to the year 1915?

A. No, sir.

Mr. Palmer:

Q. That is, just generally speaking?

A. Yes, sir.

3111 JOSEPH SAUTER being recalled in behalf of Complainant, testified as follows.

Examined by Mr. Pinkney:

(Complainant's Exhibits 44 to 48 are marked.)

Q. You are the same Mr. Sauter who testified in the former hearing of this case are you?

A. Yes, sir.

Q. Mr. Sauter, I call your attention to Complainant's Exhibits 44, 45, 46, 47 and 48, and I will ask you to state to the court where those views were taken, represented in these respective exhibits, commencing with Exhibit 44.

A. That is taken from a bridge looking northeastward toward the buildings over section 20, over the southeast quarter of the southwest quarter of Section 20.

Q. When was it taken?

A. Taken in the month of July 1916, probably the middle of July.

Q. Does that truly and accurately represent the appearance which it purports to represent of the flood consitions existing at that time?

A. Yes, sir.

Q. I call your attention to Complainant's Exhibit 45. State to the Court what that view represents.

A. There is a little patch of wheat that we threshed in 1913, I think it was. My neighbor raised it, Mr. Andrews raised it on Sec-

tion 20, and we threshed the wheat, and after we got through threshing he said the wheat threshed out 31 bushels to the acre. It was a small tract of land 12 acres w-ere he had corn the year before.

Q. That represents what?

A. That represents the grain before it was threshed.

3112 Q. That represents the grain standing in the field?

A. Yes, sir, before it was threshed, on some of what they tried to make out was marsh land.

Q. What land was that photograph taken on?

A. It was taken on the west half of the west half of 20, 129, 47.

Q. How far from your own land?

A. Not more than 30 or 40 rods.

Q. I call your attention to Complainant's Exhibit 46, and ask you to state where that view was taken from, what it represents?

A. That view was taken from the middle of the road leading between Section- 20 and 29, looking eastward.

Q. What township and range?

A. Township 129, Range 47, and it represents part of the water on 29 and on 30.

Q. What is this portion represented by the darker figure, with the light spots in them, in the center of the photograph?

A. That is where the water had been over the road, and went down a little bit. There is where it is still over the road, and that is the turnpike on the other side of the water.

Q. On whose land was that taken?

A. This was taken on my land, a part of this is on Andrew's up to this corner.

Q. It is a true representation of the appearance of that land at the time, is it?

A. Yes, sir.

Q. What is this smooth part on each side of the track?

A. That represents water.

3113 Q. Did you take a measurement of the water there at this point on either side of the road at any time before this was taken or about the time it was taken, so as to know about how deep it was?

A. I didn't take any particular measurement of it, but I drove through there side of the bridge, which we had to at the time of the construction of the new bridge, and it was deep enough to go over the top of the front wheels of the wagon.

Q. About how high are those front wheels?

A. I should judge four feet.

Q. What part of the water did you drive through as represented on this photograph?

A. Right along through there, right alongside of the road.

Q. That would be the portion that is over on the right hand side of the photograph?

A. Yes, sir, over on the right hand side of that dark figure there.

Q. I call your attention to Complainant's Exhibit 47, and state when that was taken, and what it represents?

A. That was taken about the 20th of June, 1917.

Q. What does it represent?
A. It represents cat-tails and *and* two teams plowing.
Q. Where was it taken?
A. It was taken on the southeast quarter of the southwest quarter of 20.
Q. Is that your land?
A. Yes, sir.
Q. To which you testified the other day?
A. Yes, sir.
3114 Q. What is that in the foreground of the picture?
A. Cat-tails.
Q. Is it a true and correct representation of your land at the time it was taken?
A. Yes, sir.
Q. What is shown in the background?
A. There is two teams in the background, you just see the horses' heads over the rushes.
Q. Where do they appear in the picture, one in the center?
A. Yes, sir, and one towards the left a little, right over the rushes.
Q. How much of the horses' heads appear there?
A. Not over 6 inches or a foot, I should judge, about half of the horses' heads.
Q. Were they the ordinary sized farming horses?
A. Yes, sir, medium sized farm horses.
Q. Was the ground practically level at the place the photograph was taken to the place where the horses were?
A. Yes, sir.
Q. You may tell the court where Complainant's Exhibit 48 was taken, and what time it was taken?
A. It was same field at the same time, only the teams instead of coming south, was going north here, so that it gives a fuller view of the team.
Q. Is that team shown in the photograph?
A. Yes, sir, the team is traveling northward.
Q. Where is the team?
A. In the center of the photogaph.
Q. What are those tall growths in the photograph?
3115 A. They are cat-tails. That part of the field there is plowed, and that part is still standing.
Q. It wasn't plowed when this was taken, the cat-tails that appear here wasn't plowed, were they?
A. That portion was.
Q. That portion in the background was plowed?
A. Yes, sir.
Q. Was this portion plowed in the foreground where the cat-tails are?
A. No, sir.
Q. That was on Section 20-129-47?
A. Yes, sir.
Q. And with the exception of the picture taken on the Andrews

land, these are all pictures taken on your land, showing flood conditions, their growth, etc.?

A. Yes, sir.

Q. Those are the lands to which you testified the other day?

A. Yes, sir.

Mr. Pinkney: We offer in connection with the testimony of this witness Complainant's Exhibits 44 to 48 inclusive.

3116 GUSTAV F. LUNDBERG, being sworn in behalf of the Complainant testified as follows.

Examined by Mr. Bronson:

Q. Are you the owner of the southwest quarter and the west half of the northwest quarter of section 34 township 129 range, 47 consisting of about 229 acres?

A. Yes, sir.

Q. How long have you owned that.

A. Since 1888, 29 years.

Q. Did you homestead some of it?

A. Yes, sir.

Q. How much?

A. 160 acres.

Q. Southwest quarter?

A. Yes, sir.

Q. 1915, did you have flood waters come on that?

A. Yes, sir.

Q. Did you lose some crops in 1915?

A. Yes, sir.

Q. How much crops?

A. I seeded 38 acres of wheat, I received 400 bushels out of those 38 acres.

Q. Did you cut all of the wheat?

A. I cut a portion of it at first, and then afterwards we cut the rest of it and used it for chicken feed, hauled it home and used it for chicken feed.

Q. How many acres did you cut afterwards?

A. About 15 acres.

Q. How much did you sow in corn?

A. 25 acres, I checked in 25 acres.

3117 Q. Was that flooded, the corn?

A. All over.

Q. Was the corn lost?

A. Yes, sir, all of it.

Q. Did you put any barley in?

A. I put in 5 acres, and I seeded that twice, and didn't get any returns from it?

Q. Did you get a crop in 1914?

A. Yes, sir.

Q. When did the flood come on in 1914 if you had any?

A. I had no water that bothered me in 1914.

Q. How many acres were broken on this land?

A. 105 acres, that is on the quarter, 175 acres under cultivation in all.

Q. Did you sow anything in 1915, except the wheat and the corn and the barley?

A. No, I didn't seed anything more on the quarter, but I seeded 25 acres in oats on the 80, and I didn't get much of anything of that.

Q. Was it flooded?

A. There is 5 acres in a slough that runs close up to the land, and so it spreads over 5 acres of the 80.

Q. Did you only lose 5 acres, or did you lose all of the oats?

A. Yes. Outside of those 5 acres, I received about 15 bushels of oats to the acre on what was left of this 25 acres. That makes about 300 bushels.

Q. In 1915 you lost 15 acres of wheat?

A. Yes, sir.

Q. And about 25 acres of corn?

A. Yes, sir.

3118 Q. And 5 acres of barley?

A. Yes, sir.

Q. And five acres of oats?

A. Yes, sir, that is on the 80.

Q. Anything else?

A. My whole pasture was covered.

Q. How many acres?

A. It is two pastures, 40 acres all told.

Q. What was your wheat good for, the yield, as it stood?

A. 15 bushels.

Q. Of barley as it stood?

A. 15 or 20 bushels to the acre, if it would have been grown up.

Q. And the oats?

A. About 30 bushels.

Q. What was the corn worth per acre on that ground?

A. $6.00 an acre.

Q. What was the market price of the wheat that fall?

A. 98c.

Q. What was the pasture worth per acre?

A. About $2.00.

Q. What was the barley worth that fall?

A. 75c.

Q. And the oats?

A. 50c.

Q. Those crops, figured at those prices, would come to a total of about $584.69?

A. Yes, that isn't anything too much.

Q. You think you sustained that loss that year?

A. Yes, sir.

Q. By reason of this flood?

3119 A. Yes, sir.

Q. Were you flooded the next year 1916?

A. There was plenty water come over, it is the most awful season for 29 years.

Q. Did it flood over how much of your land?

A. The whole quarter clear up to the buildings. There is only 5 acres on the 80 acres, the 80 is higher than the quarter about 165 acre- except where the buildings stand.

Q. How much where the buildings stand, 2 or 3 acres or five acres?

A. I can't tell you, about 3 acres.

Q. You had about 160 acres flooded in 1916?

A. Yes, sir.

Q. Did you get any crop on that?

A. No, sir.

Q. Put none in?

A. No, sir, I had only a quarter of an acre I put in, it was close up to the buildings, that was all the grain crop I had in.

Q. What was the rental value for 1916, of the 160 acres?

A. If it had been in crop at all, it should have been $500 at the very least.

Q. Did you have any crop in 1917?

A. Only 15 acres of fodder corn, it was too wet to plow.

Q. What is the rental value of the acres you lost in 1917?

A. It ought to be the same as in 1916.

Q. Were you able in years before to use or cultivate this land that was so flooded in 1915 and 1916?

A. All through, with the exception of that 1897, more or less.

3120 Cross-examination.

By Mr. Palmer:

Q. When you homesteaded this land in 1888 was it the only piece of land around there that was open to homesteads?

A. I bought the right from another party, it was a tree-claim before.

Q. How long had the other party lived there?

A. Nobody lived there, he had just taken it.

Q. Were there any buildings on the land, or was there any part of it plowed up?

A. There was 10 acres broken up, where he was to plant trees, but that was all.

Q. How much did you pay the man that you bought out in 1888?

A. $190 for his rights.

Q. For the southwest quarter of 34 only?

A. Yes, sir.

Q. When did you buy the 80 acres, the west half of the northwest of 34?

A. About 10 or 12 years ago.

Q. Whom did you buy it from?

A. From C. S. Smith, the lumber man of Minneapolis.

Q. What did you pay for it?

A. $800.

Q. Did that 80 acres ever have any buildings on it, or fences, or any improvements?

A. No, sir.

Q. Was there any of it plowed when you got it?

A. It was broke on there, all that is broke today.

3121 Q. How many acres is that?

A. 60 acres.

Q. Is that better land, higher land than the homestead?

A. Yes, it is the highest between Blackmer and White Rock.

Q. How much is cultivated land on the homestead?

A. 105 acres.

Q. How far is this land from White Rock?

A. White Rock is one mile south of my land.

Q. What time in 1888 did you buy the land that you homesteaded?

A. 11th day of August—Oh, that is the quarter, I proved on it in 1895.

Q. Was the town of White Rock there when you bought the land?

A. Yes, sir.

Q. And the railroad built?

A. Yes, sir.

Q. What were the conditions there as to flood in 1897?

A. The water was high then and it flooded my land but this time it was higher.

Q. Did you have a crop on your land in 1897?

A. Yes, sir. I had a little crop in 1897 the water came somewhat earlier and it receded.

Q. What time did the water go off of this land in 1897?

A. In July, it went down about an inch and a half in 8 days.

Q. How much of your land was covered with water in 1897?

A. All of my land was not covered in 1897. I threshed

3122 about 300 bushels of wheat.

Q. How many acres were out of water?

A. About a quarter of the land was not coevered with water.

Q. What other years have you been bothered with the water coming upon your land?

A. In 1893 I was bothered with water, but it only came up on my land a little at that time. It is 3 or 4 times, but I wouldn't say when it was, that it went up a little on my land.

Q. Has it troubled you some years so you didn't raise as good crops as other years?

A. I couldn't seed it in, so I didn't get anything on what the water was over.

Q. How did you go to town in 1915, and 1916 during these floods?

A. With a boat. In 1916, I used a boat all summer to go to town until it froze up in the winter.

Q. 1915 did you use a boat often?

A. It was a nice spring up until the month of June.
Q. When did you begin to use the boat that summer?
A. July.
Q. Had you used a boat before to get to town, before that year?
A. In 1897, I used it part of the time.
Q. And other years in the spring, did you use a boat in the spring?
A. No, not to go to town that I can remember.
Q. Did you use a boat around there more or less other springs?
A. I used a boat to go across the river, but not to go to town, or anything of that kind.
3123 Q. And other times did you make use of the railroad track to go to town?
A. I was using the railroad track more or less all the year to go to town, when I walked to town.
Q. In 1915, in the spring, how was that road on the south line of your farm?
A. I could use it the last part of June, then I couldn't use it any more.
Q. Was it a good road, so you could use it to go before that?
A. It ain't any extra road, it is graded some.
Q. Has never been a good graded road?
A. It has been graded to town, but the grade hasn't been any extra high, but it is a good road there now.
Q. How was the road on the west side of your land in the spring of 1915?
A. That is the road I mean.
Q. On the west side?
A. Yes, sir.
Q. That is the road you have been talking about?
A. Yes, sir.
Q. I want you to tell us about the road on the south side of your land, running east and west?
A. I have no road there, it is 40 rods from the road, the wagon road.
Q. Has there ever been a road along the south side of your land running over to the river?
A. Nothing but what I have made since I came here. I drive down to the railroad. In the early days they drove down the east side of the railroad down to town.
3124 Q. Is there any road from the south side of your land on the west over to the Johnson place?
A. It is a poor road on the state line, but it ain't very good trail.
Q. Has it ever been a good road at any time along there?
A. It has never been graded, but they have worked, built up the holes in there.
Q. How did Johnson get to town when he lived on his place on the southwest of 33?
A. He drove diagonally across the farm, that is south of the line there.

Q. Was he able to make use of this road on the state line to get to town?

A. He was part of it.

(At this time recess is taken until 9:15 Nov. 16, 1917.)

(NOTE.—The testimony of the three following witnesses in behalf of the defendant was taken before this date, and is transcribed here with the testimony of the witnesses for the defendant who followed.)

3125 November 13th, 1917, at 9:15 a. m.

JOHN Q. BURBANK, sworn in behalf of defendant, testified as follows.

Examined by Mr. Palmer:

Q. Where do you live?

A. Wahpeton, North Dakota.

Q. How long have you lived there?

A. Since 1870.

Q. What is your occupation?

A. Surveyor and civil engineer.

Q. How long have you practiced that profession?

A. Since 1869.

Q. Continuously?

A. Nearly, yes, sir.

Q. What is your age?

A. 69.

Q. Where were you born?

A. New Hampshire.

Q. Are you a graduate of some college or institution?

A. Only the Bates College, known as a seminary there, Lewiston, Maine.

Q. Did you come from the east directly to Wahpeton, North Dakota?

A. I came in 1868 to Chicago; came to Yankton, South Dakota, in 1869.

Q. Do you hold some official position in Richland County, North Dakota?

3126 A. County surveyor.

Q. How long have you been county surveyor?

A. With the exception of 4 years, for 20 years. There was two terms somewhere scattered in between those 20 years I wasn't in the field.

Q. 2 terms of 2 years each?

A. Yes, sir.

Q. I call your attention to defendant's exhibits 107 and 108, being certified copies of the government survey and plat of the lands in township 130 and 129, in range 47 Richland County, North Dakota, and will ask you if you are familiar with those plats?

A. Practically, yes, sir.

Q. And with the land thereon mapped?
A. Yes, sir.
Q. Did you have anything to do with the making of the surveys and the field notes from which those plats are made?
A. I did.
Q. What was it?
A. In these subdivision lines I had full charge of the party, I was the instrument man, I had full charge of all of that work, of all of the subdivisions in those two townships.
Q. Were you then in the employ of the United States Government?
A. I was in the employ of the deputy, Blanding, who had the contract.
Q. With the government?
A. Yes, sir.

Q. And when did you enter upon any part of this work?
3127 A. In July 1874, for the interior lines. I was chairman on the south boundary of this township on the 7th standard parallel in 1870, three years prior to this time, but this work I had full charge of the subdivisions in 1874 and began on that work in July, 1874.

Q. When did you first enter the government service as a surveyor?
A. In 1870, I was chairman and in 1871, I had work of my own.
Q. In 1870 you say you were chairman in establishing the south line, the 7th Standard Parallel?
A. That would be the south side of 129.
Q. Which is the south line of township 129, Range 47?
A. Yes, sir.
Q. That is the south line shown on the plat, exhibit 108, is that correct?
A. Yes, sir.
Q. Did you make field notes of this government survey?
A. Yes, the interior lines.
Q. On all interior lines?
A. Yes, sir.
Q. I direct your attention particularly to the south line of township 129. How did you fix the eastern limits of that line?

Mr. Pinkney: We object to that as not the best evidence; the field notes are the best evidence of the establishment of all lines.

Mr. Palmer:

Q. Describe the establishment of that line?

A. Mr. Pinkney: Same objection.

A. From the meander corner on the Minnesota side where that had been down prior to this time.

Mr. Palmer: When was the government survey on the Min-
3128 nesota side made or about when?

Mr. Pinkney: We submit that the field notes are the best evidence of the fact inquired about.

A. I don't know, it was done some considerable time before we did this work. I could judge that by the mounds we used in starting.

Mr. Palmer:

Q. After fixing the base line, describe the method of establishing the eastern boundary line of these townships 129 and 130; describe in a general way.

Mr. Pinkney: We object to that as that clearly calls for a statement of what the field notes alone are the best evidence.

A. We had the field notes of the surveys that had been made prior to this time from the Minnesota Surveyor General's Office and this being the standard it is in equal miles clear across the whole country, commences in range 1 and extends westward until it strikes the Montana line and each of those *of those* miles on the standard are double chained and exactly a mile apart. We take that section corner and measure the intersection into the river on the field notes and continue that on until we reach a mile west of the east side of that section, and there we establish that section corner.

Q. West line of the Minnesota section?

A. It is a fractional section but—that is, the section is divided between Minnesota and North Dakota but we make it, in our measurements, we make it as a whole section just a mile from the southeast corner to the southwest corner of the section. There we establish that section corner, and so on across.

Q. What did you establish as the eastern limits of this township 129?

3129 Mr. Pinkney: We urge the same objection to that question.

A. High water mark.

Mr. Palmer: In what?

A. In the Bois de Sioux river.

Q. From there on northerly in establishing the eastern line of these two townships, what did you use?

A. High water mark.

Q. Of the Bois de Sioux River?

A. Yes, sir, the west line.

Mr. Bronson: We object to this line of examination on the part of the defendant as immaterial and not the best evidence, no foundation laid for its introduction and inadmissible and it may be understood that the same objection may apply to similar questions of that nature.

Mr. Palmer: It may be so understood.

Q. I call your attention, Mr. Burbank, particularly to this survey in section 9, township 129, of range 47 and will ask you if the eastern limits of government lots 1, 2, 3 and 4, as shown upon

the plat are correct and accurate as established by the government survey?

A. They are.

Q. Now, any land that lies easterly of the eastern boundary of those lots as shown on this government plat is where?

Mr. Bronson: That is objected to, in addition to the previous objection made, calling for a mere legal conclusion.

A. In Minnesota.

Mr.Palmer: Is that likewise true of any land easterly of lots 1, 2, 3 and 4 in section 4 of this same township?

Mr. Bronson: Same objection.

3130 A. Yes, sir.

Mr. Palmer:

Q. Take section 33 of township 130, range, 47; is that likewise true of any land lying easterly of the east boundary of lots 1 and 2?

A. Yes, sir, the Bois de Sioux river lays in between that and the land and then it is Minnesota land.

Q. Is the stream of the Bois de Sioux river as marking the easterly boundary line of all of these lands in these two townships, correctly shown upon these two plats, defendant's exhibits 107 and 108?

Mr. Pinkney: We object to that as incompetent and immaterial, not the best evidence.

A. I think so, in my opinion they are.

Mr. Palmer:

Q. Are they correct as you established them there?

A. They were established from my field notes and those field notes were correct.

Q. I call your attention to defendant's exhibit 108 and particularly to the lands in section 34 of township 129 of range 47 and extending from there northerly into section 28, and westerly over into 33. What is indicated by the marks which shade that part of the map?

A. Low marshy land.

Mr. Bronson:

Q. You mean what is indicated on the map, do you not?

A. Yes, sir.

Mr. Palmer:

Q. Is that the marking uniformly used to designate low marshy, land?

Mr. Bronson: That is objected to as no foundation laid, incompetent, asking for a mere opinion of the witness.

A. Yes, sir.

3131 Mr. Palmer:

Q. And is that likewise true of all the lands so marked or shaded upon both of these exhibits, Exhibits 107 and 108?

A. It is.

Q. In 1874 when you did this work, did you observe these lands mapped on these exhibits?

A. I did.

Q. And to what extent did you observe them?

A. We run lines over every mile, both north and south and east and west, and we were compelled to observe them in order to take the topography of the country and get these field notes that were required by our instructions.

Q. Did your duties include the noting and recording of the topographical features of all lands surveyed?

A. Yes, sir.

Q. Now, Mr. Burbank, were those lands at the time you made those surveys, which are here shown to be low and marshy, in fact low and marshy at the time you made these surveys?

A. They were.

Q. Now, wherever there is indicated on these plats lot, wet slough and marsh, were the lands in fact at that time in the condition stated upon these plats?

A. They were. We get the exact width of them where the section line crosses them but in sloughs like these (indicating) we have the intersection there and there we leave them, but this is drawn from observation, where they run in the interior of the section, and this line here is drawn from observation, but the eastern line is got from the meander that was run down this stream.

Q. Let me understand you then, wherever your lines in-
3132 tersected the swamp or marsh, you particularly noted at that point?

A. Yes, sir.

Q. And wherever the lines again cross such a marsh or swamp it is particularly noted at that point?

A. Yes, sir.

Q. But the boundaries between those particular points you fix by your observation of the land instead of running it with instruments, is that correct?

A. That is correct.

Q. And what does this indicate, this marking of these lands as low and marshy in respect to their suitability for agricultural purposes?

A. Well, it is unsuited for agricultural purposes.

(Defendant's Exhibit 110 is marked.)

Q. Did you observe as to whether or not these lands that are indicated as low, marshy land adjacent to the Bois de Sioux river immediately westerly thereof, were lands that were subject to periodic overflow from the river?

A. Yes, sir.

Q. And were they so?

A. They were.

Q. I call your attention now to Defendant's exhibit 110, being the government plat of Township 131, of Range 47, and particularly to the long slough or marsh indicated in sections 5 and 8 thereof, and will ask you if that indicates a strip of low and marshy land?

Mr. Pinkney: It is the best evidence of what it indicates.

A. Yes, sir.

Mr. Palmer:

Q. I call your attention to the Bois de Sioux river a half a mile easterly of this long slough in Sections 5 and 8, on this Ex-
3133 hibit 110, and will ask you if you have knowledge as to the overflow of the Bois de Sioux river into that slough?

A. I have.

Q. What is the fact as to that?

A. The Bois de Sioux river gets to these bends in section 9 in high water, in very extreme high water the water gets right across into this slough, and that slough continues on in spots both places until it reaches the Wild Rice river and the water runs from the Bois de Sioux river in section 9 right across down that and empties into the Wild Rice.

Q. Let's see if we have that correctly. You say that where the Bois de Sioux river goes through these various windings and convolutions in Sections 9 and 16, in times of high water the Bois de Sioux river overflows into this long slough shown to the westerly in Sections 5 and 8 and passes from there northwesterly into the Wild Rice river?

A. Yes, sir.

Q. And during your long residence at Wahpeton, have you known of that occurring periodically?

A. It has occurred several times since I have been living there.

Q. What is the character of the land between the Bois de Sioux and the Wild Rice at that point?

A. Same average height of land, same kind of land as there is all up and down that valley.

Q. I mean the land in between the Bois de Sioux and the Wild Rice at that point?

A. This is a well defined channel in through there that catches these high banks at the time it leaves the edge of this and the rest is smooth prairie.

3134 Q. That is, this long slough in Sections 5 and 8?

A. Yes, sir.

Q. How far is it from the Bois de Sioux over to the Wild River about?

A. About 5 or 6 miles.

Q. Mr. Burbank, I understand that you have a public ditch law in the State of North Dakota?

A. I think so; I haven't had anything to do with the drainage.

(Defendant's Exhibit 111 is marked.)

Q. Are you familiar in a general way with the county ditches of the County of Richland?

A. Yes, sir.

Q. I call your attention to Defendant's Exhibit 111 and will ask you if that shows in substantially correct form the various county ditches in the county indicated by the heavy black lines?

A. It does.

Q. What does the figure appearing in quite large type indicate?

A. Those are the numbers of the drains.

Q. Calling your attention to a ditch indicated, marked 3, in La Mars township and extending over into Fairmount township, does that indicate County Ditch #3?

A. It does.

Q. And is this a substantially correct plat of Richland county?

A. It is.

Mr. Palmer: We offer in evidence at this time Defendant's Exhibits 107, 108, 109, 110, and 111.

Mr. Pinkney: We object to them as incompetent and immaterial and not tending to prove any issues in this case, no foundation laid for their introduction, and we make the same objection to each and every one of them.

3135

Mr. Palmer:

Q. Since you have resided in this locality, which you say has been since 1870, what has been your observation as to wet and dry years, particularly the succession of them?

A. Well, we have so many years at a time, so many years that the water seems to be less, growing less gradually each year, rains and snows, until they get,—that is, the sloughs are all dry and swales and drains, and they have a certain number of years of increasing their waters. There are periods of about 20 years and 10 years the waters seem to be drying and receding and 10 years coming back to its highest point, wettest point. Of course, I have seen only two of those.

Q. Has that been your observation with respect to the filling up of the lakes and rivers in this locality?

A. Yes, sir, lakes especially.

Cross-examination.

By Mr. Bronson:

Q. You are not a farmer, are you?
A. No, sir.

Mr. Pinkney: We move to strike out all the testimony of this witness touching these surveys and sections and cross sections for the reason stated in our objections to the testimony as offered.

Mr. Bronson:

Q. When did you come to this territory?
A. 1870.

Q. That means to Wahpeton, North Dakota, or Dakota ter-
3136 ritory?

A. Wahpeton, North Dakota, late on the fall of 1871.

Q. Fall of 1871 you came to Wahpeton?
A. Yes, sir.
Q. Did you live at Wahpeton?
A. I did.
Q. And how many years did you live there continuously?
A. About 7 years.
Q. About 7 years that you lived at Wahpeton?
A. I think so, 1878 or 1879.
Q. And then where did you live?
A. I went to Arkansas.
Q. Where did you go in Arkansas?
A. Bald Knob.
Q. 2 years at Bald Knob, Arkansas?
A. Yes, sir.
Q. What did you do there?
A. In the lumber business.
Q. Buying and selling lumber?
A. Manufacturing.
Q. Did you run a saw-mill plant?
A. We had a sawmill plant.
A. Did you have a saw-mill plant?
A. I was connected with the saw-mill plant. I was part owner in the saw-mill plant.
Q. Part owner in a saw-mill plant for two years, then where did you go?
A. I lost the use of my eyes and went back to New Hampshire.
Q. Where in New Hampshire?

A. Gorham, New Hampshire.
3137 Q. And how long did you stay there?

A. About two years.

Q. What did you do there?
A. Nothing, visiting with my people.
Q. Then where did you go?
A. Chicago, Illinois.

Q. How long did you stay there?
A. About two years.
Q. What did you do in Chicago?
A. In the milling business.
Q. What do you mean by milling business?
A. Manufacturing of feed and handling and selling of flour.
Q. Feed store?
A. No, it was a mill.
Q. Grist mill?
A. Well, it was a custom mill, a mill that ground their own stuff.
Q. Did you run the mill or work in the mill?
A. I was shipping clerk.
Q. And after you were there two years then where did you go?
A. Kansas.
Q. Where in Kansas?
A. Garden City.
Q. How long were you there?
A. About three years.
Q. What were you doing there?
A. In the land business.
Q. In the land business?
A. Yes, sir.
3138 Q. What do you mean by that?
A. Practicing there before the United States land office, surveying some and in the loan business with a Boston concern.
Q. Practicing some before the U. S. Land Office?
A. Yes, sir.
Q. Then where did you go?
A. Wahpeton, North Dakota.
Q. From Garden City, Kansas, you went to Wahpeton, North Dakota; what year did you return to Wahpeton, North Dakota?
A. Somewheres in the 90's or last part of the 80's, I don't remember exactly.
Q. Were you a married man?
A. Yes, sir.
Q. Family with you?
A. Yes, sir.
Q. In all these different places?
A. Yes, sir.
Q. Came back to Wahpeton then in 18——
A. I must have come back close to 1890, I don't remember.
Q. And you came here in the fall of 1871, and were here about 7 years?
A. Yes, sir.
Q. And then you came back to Wahpeton in 1890?
A. In that vicinity, not far from there.
Q. You practiced some in the Land Office at Wahpeton, North Dakota?
A. No.
Q. You can't fix any more definitely the time of your return to Wahpeton than to state that is was close to 1890?

3139 A. Not at this time, I couldn't, I could at Wahpeton.

Q. How could you fix it at Wahpeton?

A. The records of surveys I made immediately after arriving since that time; I could fix it within a month or so.

Q. Do you know you were here in the year 1890?

A. Only what I have stated. I don't know but I think I was.

Q. And have you been here ever since that time?

A. Ever since, with the exception of two winters.

Q. What two winters.

A. About 1908 or 1909 or 1910, somewheres in there.

Q. Where were you those winters?

A. Boise, Idaho.

Q. That was just during the winter time?

A. Just in the winter time.

Q. So if I understand you correctly as to your residence here, in this country, you were here from 1871, to 1878 and then from about 1890 up to the present time, excepting two winters.

A. Yes, sir, that is correct.

Q. Now, your business apparently since you have been up in this country has been that of county surveyor and city engineer?

A. I have never been city engineer, civil engineer.

Q. I mean civil engineer. You haven't been engaged in any other business during that time?

A. No, sir.

Q. When you came here in the fall of 1871, the territory known now as North Dakota and now known as South Dakota, was then the territory of Dakota?

A. Yes, sir.

3140 Q. You have mentioned about assisting in making some surveys in the early days. What were you known as in assisting in making those surveys, chainman?

A. First I started in as a chai-man, first year, 1870, I was chainman.

Q. You were the chainman in 1870?

A. Yes, sir.

Q. And 1871?

A. 1871, I have a government contract of my own.

Q. What do you mean by government contract of your own?

A. I had 12 townships to subdivide.

Q. Are they these townships that are included here?

A. They are not.

Q. They are different townships?

A. They are.

Q. Where situated?

A. Principally Cass county, Traill County, and there was one in this County, under that contract there was one in this county.

Q. Whereabouts in this county?

A. Northwest township of the county.

Q. You mean in Helendale?

A. Yes, sir.

Q. Is that the one?

A. Yes, sir.
Q. How far is that from Fairmount township?
A. Forty or fifty miles.
Q. How long did you work as chainman?
A. One season.
Q. That would be in 1870?
3141 A. 1870.
Q. That chainman work covered this territory along the Bois de Sioux river?
A. No, sir, not in 1870, covered the south boundary of 129 only.
Q. Then when did you have this government contract yourself for these other subdivisions?
A. The next year, 1871.
Q. Just that one year or more than that?
A. That contract was finished that year. The next contract I had was in 1898, or 1897.
Q. Where was that?
A. Up north of Dickinson, the Little Missouri River west of Williston and down to Schaffer.
Q. The work you did as chainman was in 1870?
A. Yes, sir.
Q. Was that at the time you went along this Bois de Sioux river?
A. No, that was in 1874 I went along the Bois de Sioux river; 1870 I established the base line, I was the chainman on that line. This wasn't subdivided until 1874.
Q. Weren't you with a party in 1874?
A. I had full charge of that work, the party, that had the contract wasn't in this township at all when the work was done.
Q. Were you a sub-contractor?
A. I was not; I was employed by the contractor as compassman.
Q. Now, you didn't make this exhibit 107, did you, yourself?
3142 A. No, sir, it was made at the Surveyor General's office.
Q. Nor did you make exhibit 108?
A. Those plats are always made at the office of the surveyor general.
Q. Or exhibit 109?
A. No.
Q. Where are the field notes of these plats?
A. They are at the State Engineer's Office in Bismark. When the Surveyor General's office was closed those field notes under the laws of Rules of the department were turned over to the State Engineer or whatever officer the state selects for that purpose.
Q. You haven't got them.
A. No, sir.
Q. When did you see them last?
A. I haven't seen them since I turned them over.
Q. Did you make them?
A. I made the field notes, but—I made the survey and the field

notes and then they were turned in by the contractor into the Surveyor General's office.

Q. You think they were?

A. I know they were.

Q. You haven't seen them since?

A. I haven't seen them since only what I have seen copies there upon those plats.

Q. You didn't make these plats from field notes?

A. I didn't make the plats at all.

Q. You haven't checked these plats with the field notes?

A. I have not.

3143 Q. And you don't pretend to state that you have checked such plats from such field notes?

A. No, sir.

Q. Or that the plats are an accurate reproduction of the field notes?

A. No, sir.

Q. Now, counsel has asked you concerning the boundary line formed by the Bois de Sioux river, do I understand that you testified that the high water mark on the western border of the Bois de Sioux river was taken?

A. That is what we was supposed to take, that is what we throug it was.

Q. Where did you get the high water mark?

A. From the high bank.

Q. Of the Bois de Sioux river?

A. Yes, sir.

Q. Whereabouts?

A. On the west side *if* the river.

Q. On the west side?

A. Yes, sir.

Q. All the way up?

A. Yes, sir.

Q. That is, the high water mark all the way up from White Rock to Fairmount was taken as the boundary line for the purpose of meandering subdivisions?

A. Yes, sir.

Q. And were there well defined banks all the way along so you could get that high water mark?

A. Yes, sir, I think so. They wasn't so very high banks, some places 14 inches, 18 inches, 2 feet the further you go north

3144 the higher they get, south end 18 inches to 2 feet high.

Q. What do you understand to be what is termed the high water mark in engineering terms?

A. Well, we assume that the top of the prairie,——

Q. You are a civil engineer?

A. I am.

Q. What do you understand in engineering terms to be the high water mark on any stream?

A. I should understand that to be the point where the highest water had reached.

Q. And what do you understand in engineering terms to be the low water mark?

A. The lowest stage of the water.

Q. I understand that you took, for purposes of meandering, the high water mark on the Bois de Sioux river, on the west side?

A. Not exactly, I took the high as we considered it for ordinary purposes, for our purposes, the high water mark. If we had taken the high water mark we would have gone back in many places much further, perhaps a mile or two.

Q. Which way?

A. West.

Q. Then you didn't take the high water mark?

A. Not the highest stage of the water, no.

Q. Why didn't you?

A. Well, we wasn't supposed to. We were supposed, we had a guide to go by. We didn't use our own judgment in getting this start had a guide by retracing work that had been done prior to that time on that 7th standard where it intersected the Bois
3145 de Sioux river, and a distance of a rod or two was the next bank the same height as the Minnesota side and that we took for our data of high water.

Q. You didn't mean to testify that in making this survey for the purposes of meandering you took all the way along or at any portion, the high water mark?

A. Why no, it isn't to be considered that way at all.

Q. In making surveys as you did in the early days, how was the meander line ordinarily determined and fixed along a stream?

A. By the high bank.

Q. That is, in making your field notes and fixing the meander lines or lands upon which you were making a survey, you followed the windings of the stream along the ordinary bank of the stream adjacent?

A. We would.

Q. And in fixing these lines on these exhibits that you have testified concerning, is such meander line so established in that way.

A. They were.

Q. And it was supposed to be just a meander line, isn't it?

A. Yes, sir.

Q. And you at that time, in making this survey, did not pretend, as I understand, to fix the boundary between the State of Minnesota and the territory of Dakota, did you?

A. We wasn't establishing, we didn't intend to establish the boundary line between those two states.

Q. You were fixing the meander lines just like they were doing in the early days here?

A. But we had those Minnesota surveys already established.

3146 Q. At this time when you were making this survey, the Territory of Dakota on this portion where you concerned was unsurveyed and unsubdivided?

A. Yes, sir.

Q. So you were making the original survey for the U. S. Government?

A. We were.

Q. For subdivision purposes?

A. Yes, sir.

Q. In determining in accordance with our system of United States survey the various sections in Richland county, including the government lots which were adjacent to or bordering upon watercourses?

A. Yes, sir.

Q. Now, it appears that along this Bois de Sioux river there are a great number of government lots which by reason of being adjacent to a watercourse would not conform to the rectangular system of making surveys or full fractions of a section or a quarter section, isn't that correct.

A. That is correct.

Q. And by reason of that have you designated what are termed government lots?

A. Yes, sir.

Q. And in making and constituting a government lot in this rectangular system,—and you know what I mean by a rectangular system, do you not? The government lot, as I understand, is constituted by running your meander lines along the bank of a stream adjacent and join it with the rectangular system and then when you are through the government lot in your field notes shows
3147 the meander line and shows approximately the number of acres in such government lot?

A. It does.

Q. Which may be in excess of a full congressional section or it may be smaller than such congressional section?

A. Yes.

Q. Mistakes have been made, have they not, in these early days in fixing the meander lines?

A. I presume so, I never had any come to my observation. I have heard of them, heard of them frequently.

Q. The time you were over this territory in the subdivision work was apparently in the year 1874?

A. Yes, sir.

Q. Spring, summer, fall or winter?

A. It tells on those plats when that work was done. There was 14 townships in that job and it took us about 5 or 6 days to a township.

Q. It would appear from Exhibit 108 that the subdivisions in Township 129, Range 47, were 3 days in July and 1 day in October?

A. Yes, sir, that would be all right?

Q. That would be the days taken in making the subdivision survey time required or time consumed?

A. Yes, sir; well, the three days was the time the subdivision lines was run and this day in October is the time the meander line was run.

Q. And the same appears in Exhibit 107.

A. Both townships the meander lines were run at the same time after all the work was completed out west.

Q. Exhibit 107 you have referred to as having indicated on it certain designations representing marshy lands. Now, do
3148 I understand that you surveyed those lands?

A. Yes, the interior lines.

Q. But not the exterior lines, marked marshy territory?

A. You mean this here?

Q. Yes.

A. I surveyed this meander line but not those.

Q. But not the lines that designate the marshy territory?

A. On this western territory, no, sir, but where the section line crossed it those were noted.

Q. That is, this marshy designated territory was partially made from observation?

A. Between the section lines, from one section line to another it was.

Q. Was this land overflowed at that time?

A. No, sir.

Q. Was it all virgin soil at that time?

A. It was.

Q. Was there grass growing on it at that time?

A. There was.

Q. Were there any cat-tails growing on it then?

A. I didn't specially note cat-tails. There was cat-tails all along on that river here and there a place, we didn't note them especially.

Q. Marshy land generally is——

A. We put those lands down, if we saw cat-tails or anything of that kind, we put it down wet and marshy or swamp or
3149 whatever we considered the nature of the soil. We wouldn't designate what was growing upon it except it was willow brush or something of that kind.

Mr. Palmer:

Q. You would have noted it, you say?

A. Yes, sir.

Mr. Bronson:

Q. You have testified in your direct examination that marsh lands are lands that are unsuited for cultivation?

A. Yes, sir.

Q. When you say unsuited for cultivation, what do you mean?

A. I meant they were too low, too wet, too swampy.

Q. And when you say, for cultivation, what do you mean?

A. Too low for plowing, seeding, cropping, too wet.

Q. Too wet? In other words, that these lands that are designated as marsh were too low and too wet and too swampy to be plowed, to raise wheat crops and barley crops?

A. Yes, sir, they are at that time; that was my opinion at that time they were, yes, sir.

Q. That is your opinion now?

A. I don't know. I haven't been over them for some—some of of them I have been over recently but not all. On those that I have seen recently in my work I done for people around there, has been about the same condition that they were at that time.

Q. That is, the territory in 129?

A. 129 and 130.

Q. In 129 and 130, Range 47?

A. Yes, sir.

Q. That is——

3150 A. I haven't seen much change in those lands that I have been over since we surveyed them?

Q. That is, lands that were marshy and low and unfit for cultivation at that time you think were likewise unfit and unsuitable for cultivation now?

A. I should think they would be, yes, sir.

Q. That is, you mean under the conditions of the floods of 1915 and 1916?

A. I don't know anything about those floods.

Q. You didn't see those?

A. I didn't see those.

Q. Do you know whether there was any or not?

A. Only by reputation, only by hearsay.

Q. You weren't down there?

A. No, sir, I wasn't down there.

Q. Now, if it should appear that these lands, a great portion of the lands that were designated on these exhibits 107 and 108 as swampy and marsh lands, had been cultivated and had been plowed and had been put into wheat crops, oats crops, barley crops, flax crops and crops had been raised upon them and harvested and threshed for some 15 or 20 years or more, would that change your opinion any as to their marshy or swampy character?

Mr. Palmer: That is objected to as an untrue statement of the testimony, assuming a fact not established by any testimony in the case, directly contrary to the facts shown in the case.

A. The conditions at the time I found them?

Mr. Bronson:

Q. Yes, or at this time?

A. No, sir.

3151 Q. You know Peter D. Smith, who has lived here in Richland County since about 1881 on the northwest quarter of 10, did live there, near Fairmount?

A. I am not acquainted with him, I am not personally acquainted with him.

Q. You were here in the spring of 1881?

A. No, I was not.

Q. You were here in the spring of 1897?

A. Yes, sir, at Wahpeton.

Q. That was a season of high water?
A. I think so.
Q. Highest you had ever seen?
A. No, I have seen it higher than it was at any time in the 90's.
Q. When?
A. Well, in 1872.
Q. Higher than it was in 1897?
A. At Wahpeton, yes, sir, the year 1872 or 1873, I am not quite sure which of those years.
Q. Now I call your attention to Section 15, Township 130, Range 47, as shown on Defendant's Exhibit 107, and particularly the west half of the northeast quarter and lots 3 and 4 of section 15.
A. Yes.
Q. And ask you to state whether or not there is shown designated on this map some portion of that territory as marshy?
A. Yes, sir, it is.
Q. And you state that at the time survey was made it was of a marshy character?
A. I do.
3152 Q. And unsuited and unfit for cultivation?
A. In my opinion it was.
Q. The condition it was then, it is now?
A. Not necessarily. I have known sloughs to dry out so that they have been cultivated.
Q. Do I understand you to testify that what is marked here as marshy are sloughs?
A. Why, no, not necessarily sloughs, they are designated as marsh, low wet marsh, they are designated as our instructions call for it.
Q. Let me understand you. From some of these lands that counsel has asked you to designate as a swamp and to designate as a marsh, might some of those lands been low, relatively, instead of being a marsh or a swamp?

Mr. Palmer: I object to that, I haven't asked him to designate a foot of land on the face of the earch as marsh or swamp, that statement is false.

A. Well, in my opinion at that time, they would have been unsuitable for cultivation and plowing.

Mr. Bronson:

Q. Because it was a marsh or a slough, or perhaps it was a little low?
A. Low, too low, too marshy, or too sloughy, some cause for it.
Q. Let us understand what your idea was of this territory when you surveyed it in 1874. I understand from some questions that counsel has propounded to you that all of these lands that are designated on these exhibits as being a marsh were so low and of such a swampy character that they couldn't be farmed, in your opinion?
A. In my opinion they were.
3153 Q. As you indicated on these maps, Defendant's Exhibit 107 and Defendant's Exhibit 108, certain territory bearing

peculiarly marks within certain described boundaries which you call to be those marshy lands, had you not?

A. Yes, sir.

Q. Now, I am asking you whether or not in making those surveys in 1874 at a time when there wasn't any water on this land that you stated, you formed that opinion in making that survey of this territory, in the time of three days that these lands were marshy and swamp, on account of their being low, is that correct?

A. Yes, but there is a time intervening there between those three days, and another time, when I went over a portion of these last, that was October, from the time we ran those section lines, those three days, until we ran those meander lines, then we were over them again, a part of them. And if there had been any particular marked change in them from the time we ran the subdivition line until we ran the meander line that was noticeable, we should have noticed that.

Q. When you made the survey, the lands that you did survey had no water on them, generally speaking, there were not overflowed at that time?

A. No, sir, there was no—they might have had standing water, nothing to amount to anything, nothing like what we call being permanently under water.

Q. The very fact that you were able to establish that meander line along the Bois de Sioux showed that those lands at that time were not overflowed, doesn't it?

A. No, I remember from memory they wasn't overflowed but they were just exactly what those signs indicate. Those
3154 signs are given to us by the Interior Department to mark—we go into the field with a government plat, they furnish the deputy surveyor with a plat of all the exterior boundaries, and of the field notes of the exterior boundaries for them to start and connect their work on. On that plat we are to draw—where we intersect any of these things from our section lines, we have been absolutely correct, and we take that map—these boundary lines, for instance, we are running this line, starting in running east, we are running this line, we get this absolutely correct there, the width of that slough, we get this from here.

Q. In the section line?

A. Yes, sir, we get all that. Now this around through here, we draw that by observation, and we show that right on the plat and when we catch this line, we draw that over there.

Q. If you——

A. Nothing definite about it, only as near accurate as is possible.

Q. At the time you looked over the country it was all virgin territory, wasn't it?

A. Yes, sir.

Q. No wheat growing, then, no oats, no cereal crops of any kind, not even settled upon?

A. No, sir, it was not settled.

Q. As you looked over that country in making these subdivision lines, as you went along you saw the wild grasses growing there?

A. All grass.

Q. The whole works?

A. The whole works.

Q. You would find grass growing in some of this territory that is marked "marsh"?

3155 A. Yes, sir, grass all through it.

Q. And most of it, generally speaking, except there might be some low places, some water in it, but generally speaking, no water in it?

A. No water in it.

Q. No water in any of it?

A. I don't intend to be understood as saying that there was no water on any of it. There might have been water on spots that we didn't cross, where we didn't cross. I didn't intend to say all.

Q. The general character of this territory, when you made that survey along this Bois de Sioux river at the time you made it, the wild grass and the so called water grass growing all over it, and in making the division line between that which was swampy and that which was not swampy, did you take the relative height, or the topography of the country?

A. You mean to ascertain the area of those sloughs and swales?

Q. Yes, sir.

A. That was easily distinguished as it would be between a body of water and a piece of plowed land, or piece of upland prairie. They were just as distinguishable between a slough and a swale and the high prairie, just as much distinction as there would be, almost, between water and the upland of the prairie, not quite as much, as much difference as between a low swale and stubble.

Q. When you went along there and came to—made observation for it on a certain section, you would see it all into grass, wouldn't you?

A. Yes, sir.

3156 Q. To the west there would be grass which you did not include within the marsh territory, and to the east might be a portion which you concluded to be marsh territory, even though covered with grass?

A. Yes, sir.

Q. What was your method?

A. Different kinds of grasses that grow in the low places there, that grass that grows on lands that have never been pastured or harvested, hay made on. This grass is a different kind of grass, it hardly ever tops out, and it is a little different shade of color; and then the grass on these virgin prairies is red top, and grows 3½ to 4 feet high.

Q. All wild grass?

A. Yes, sir.

Q. All growing on virgin prairie, cut from a ton to a ton and a half of hay to the acre on those highest lands, that was red top.

—. ——.

Q. Therefore, in the absence of any water being there, you make designation of marshy land or not marshy land upon the kind of grass you see growing there?

Q. We took it for granted where that swale grass grew that extended up into the section. I would assume there was practically the same nature of bottom to it as it was in those where we crossed them with our lines. We wouldn't go up there to examine them, anyway; if we didn't assume them to be right, then we were wrong.

Q. And you might sometimes change them?

A. They might be different from the land we crossed, with the same kind of grass growing on these lands where we crossed, and where we couldn't see those places, the same kind
3157 of grass might be different foundation, we assumed it was the same.

Q. You might make some mistake?

A. We were not required to go up there, we never went into the interior of the section.

Q. There is no difference between you and me, is there, on the question that you cannot farm in a marsh, generally speaking?

A. Well, while I am no farmer, I wouldn't undertake to farm in a marsh, unless I was raising wild rice.

Q. Now, for instance, in regard to this land I showed you a while ago in Section 15——

A. Yes, sir.

Q. Portion of Lot 3 and portion of lot 4 and a portion of the west half of the northeast quarter of section 15, apparently shown on Defendant's Exhibit 107, as being a marsh?

A. Yes, sir, marshy land.

Q. Apparently shown as being unfit and unsuitable for cultivation?

A. Yes, sir.

Q. Now, if that land in fact has been cultivated since about the year 1893, broken up, crops of wheat, oats and barley and cereal crops raised upon that continuously up to the year 1915, did you say that was marsh land?

Mr. Palmer: That is objected to as not a correct statement of any testimony in the case.

Q. I wouldn't say it was marsh land then, when it produced a crop in 1915, I should say decidedly it was not marsh land at that time, 1915, at the time it produced that crop.

Q. Or if it did in 1914, would you say likewise?

3158 A. I will say the same under the same conditions.

Q. In other words land that can be plowed and land that can raise crops of wheat and oats and barley and flax and can raise crops of alfalfa, can raise crops of corn and can raise a good crop of upland hay and timothy or clover, year after year, is not marsh land, is it?

A. It would not be marsh land at the time it produced those crops.

Q. And that would be generally true of all these lands, wouldn't it?

A. Yes, sir, I suppose so.

Q. Do you know Mr. Schouweiler?

A. I am well acquainted with Mr. Schouweiler.
Q. And for many years?
A. Yes, sir.
Q. He is a reputable citizen of this county, isn't he?
A. I consider him so, I never *had* anything to the contrary.
Q. Look at this map again, Mr. Barbank. I call your attention to Section 28 in Exhibit 107, and particularly what would be the east half of the northeast quarter of Section 28, and what would be here the northwest quarter of the northwest quarter of section 27, and lots 2 and 3 of section 27, said township and range; and also what would be the northeast quarter of the northeast quarter of section 28, and lot 1, or the southeast of the southeast of section 28; and also lot 1 in section 27 of said township, which on this exhibit are marked as of a marshy character, are they not?
A. Yes, sir.

Q. And if these lands raised from the year 1900 at dif-
3159 ferent times up to 1915, crops of wheat, oats and barley, flax and cereals of that kind, alfalfa and corn, that would not be of a marshy character, would you think?

A. They would not if they produced crops, they would not have been marshy and produced crops.
Q. I don't understand you, therefore, to testify that these lands as mentioned on Defendant's Exhibit 107 and on Defendant's Exhibit 108, as then of a marshy character, in accordance with the designation that you have referred to, were in 1915 before these floods, of a marshy character?
A. I don't know all I know and everything about that marshy character of that land is the conditions I found at the time those surveys were made. Since that time I haven't known but very little about them. I don't claim to know a thing about that, only I claim that these surveys, where we found marsh, it is marked marsh, and we found the condition at that time and the definition of those are given on some plats I have here showing what those different signs indicate, and those are the signs that we were instructed to put on, and we put them on.
Q. You have been in this territory more or less from White Rock up to Wahpeton?
A. Yes, sir.
Q. You have seen it settled and developed, have you not?
A. Yes, sir.
Q. You have seen it grow up from territorial days up to the present time into a developed farming region, have you not?
A. Yes, sir, I have.

Q. Defendant's Exhibit 111 wasn't prepared by you?
3160 A. No, sir.

Q. You don't know anything about that?
A. No, sir.
Q. You haven't checked it up with anything have you?
A. No, sir.
Q. You don't know anything about the drains in this country to speak of?

A. Well, I have been over quite a few of them.

Q. You have mentioned, I think, in your testimony about some drains in this country, some of the ditches?

A. Yes, sir. All I know about the location of those ditches is in a general way. I didn't do any of the ditch work.

Q. So you don't know much about it?

A. I don't know much about it.

Q. The place where some of these waters spread, as you have testified to, to flood over into this slough and then northwest over toward the Wild Rice River, is some distance south of where the Rabbit river runs into the Bois de Sioux?

A. No, it is north.

Q. A little north and west of there, is that the idea?

A. Yes, it is north and—well, almost north, that ain't much west.

Q. On defendant's exhibit 110 the Rabbit river is north of the northern part of this, isn't it.

A. I don't know exactly where it is.

Q. 131-47?

A. No, it comes in right in here some place.

Q. At this place that you are talking about where some waters go over sometimes you say, to the Wild Rice River, is about 4 miles south of Wahpeton?

3161 A. Four miles south, 4 to 6 miles south.

Q. That would be only in times of flood waters?

A. That is all.

Q. Where is that Wild Rice river, speaking relatively, to the Bois de Sioux river?

A. At Wahpeton, it is west.

Q. About how far?

A. About four miles, 3½ or 4 miles.

Q. You have never seen any waters of the Wild Rice River coming over to the Bois de Sioux?

A. Never.

Q. It would be going further west toward the Wild Rice?

A. Yes, sir.

3162 HENRY HOKANSON, being sworn in behalf of the defendant, testified as follows.

Examined by Mr. Palmer:

Q. Where do you live?

A. Live in Roberts County, South Dakota.

Q. What direction from White Rock?

A. Southwest.

Q. How far?

A. Well, we call it about 13 miles.

Q. What is your occupation?

A. Farmer.

Q. How long have you lived out there?

A. Since 1893.

Q. Do you own a farm out there?
A. I own a half section, yes, sir.
Q. And what is it?
A. 34.
Q. Do you know Andrew Rydell, of White Rock, a witness here?
A. Yes, sir, I know him.
Q. How long have you known him?
A. I must have known him the last 10 years, about.
Q. Did you have a business transaction with him regarding the building of a garage in White Rock?
A. We went into partnership.
Q. You went into partnership with him in the building of that garage, do you mean?
A. Yes, sir.
Q. Is that the garage, which he subsequently disposed of to Mr. Crothers for some land?
A. Yes, sir.
3163 Q. When did you and he in partnership build this garage?
A. Built it in the spring of 1912.
Q. Did you and he in partnership purchase the lot on which the garage was built?
A. I purchased the lot before we went in company together.
Q. About what time was it that you purchased the lot?
A. That was in the winter time, I don't remember exactly the date.
Q. The winter previous, the winter before this, the winter before you built the garage?
A. Yes, sir, I bought the lot before.
Q. What did you pay for the lot?
A. The lot and gasoline tank and tools and some supplies, I paid $1,025.
Q. About how much were the tools, supplies and gasoline tank worth that you got with the lot?
A. Well, in my estimation, it ought to be worth about $200.
Q. Now, did you get in addition to the lot and the tools, supplies and tank the use of a wall on the adjoining lot?
A. Well, we got a permit to use the wall.

Mr. Bronson: This line of testimony is objected to upon the ground it is not the best evidence; and for the purpose of laying a foundation for further objection, we decide to examine the witness.

Mr. Pinkney: If this is for the purpose of impeachment, we object to the testimony, as no proper foundation has been laid for any such question.

3164 Mr. Bronson:

Q. Did you get a bill of sale or a deed for this property?
A. I got a deed to the lot.
Q. And this party wall proposition, is that in a deed or in writing?
A. No, sir, not that I know of.

Mr. Bronson: Objected to as incompetent, irrelevant and immaterial, no foundation laid, not the best evidence.

Mr. Palmer:

Q. Did you, in building this garage, make use of this wall on the adjacent property, did you use this other wall?
A. We attached ours to the wall.
Q. Who did you get the lot and the use of the wall from and the other property from?
A. I bought the lot from Mr. Nichols.
Q. Whose wall did you make use of?
A. Well, that is Mr. Oscarson & Company's wall.
Q. Didn't Mr. Oscarson have something to do with the sale to you?
A. He deeded that to me, the deed wasn't filled out. It was made out the year before, but it wasn't filled out.
Q. That is, the name wasn't put in?
A. No, he turned that over to me in place of Nichols.
Q. How much of this wall did you use?
A. Well, as near as I can judge, we used 80 feet.
Q. Is that the full length of your building?
A. That is as near as I know.
Q. What kind of a wall was this you used, brick or wood?
A. It is brick.
Q. What was the size of the garage?
A. 40x80.
3165 Q. As I understand it, what you built was the three sides, the roof and the floor?
A. Yes, sir.
Q. What did the building of that garage cost?
A. We paid the contractor $3,400 for it.
Q. Did they furnish all of the material and the work at $3,400?
A. We had to pay for some filling, gravel hauling.
Q. You did the gravel hauling. Where did you haul the gravel from, how far?
A. About a mile east of White Rock.
Q. Have you some idea what the hauling of that gravel was worth?
A. I haven't any idea how much it would amount to.
Q. And you and he did the hauling yourselves?
A. Well, we hired a drayman.
Q. Don't you know what you paid the drayman, or about how much?
A. I never kept any track of that that I know of.
Q. Do you know how many hundred dollars it was, whether it was $100 or $200?

Mr. Pinkney: We object to that, the witness said he don't know.

Mr. Palmer:

Q. I simply want a general idea about that.
A. Mr. Rydall, he kept track of the most of those things

Q. Well, about what did the whole garage cost you two men, what did the whole business cost you, lot and all?
A. Well, the building $3,400 and the lot $1,025.
Q. That would make $4,425. What do you think it cost all told?

3166 Mr. Bronson: Objected to as calling for a mere opinion, not a fact.
Mr. Palmer: I want his opinion. Did it cost you to exceed $5,000?

Mr. Bronson: That is objected to as calling for a mere opinion of the witness and not a statement of fact, the witness having already stated the items.

A. It cost $5,000 anyway.

Mr. Palmer:

Q. Did you sell out your interest in this garage property to Mr. Rydell?
A. Yes.
Q. When?
A. Sept. 3, 1913.
Q. Did you have a full one-half interest in the garage property?
A. Yes, sir.
Q. How much did Mr. Rydell pay you for your one-half interest?

Mr. Pinkney: We object to that as incompetent, irrelevant and immaterial.

A. $1,500.

Mr. Palmer:

Q. What did you count the garage property worth when he bought you out?

Mr. Bronson: That is objected to as immaterial.

Mr. Palmer:

Q. What did you call it worth?
A. Well, we figured it at $3,000 when he bought me out. I was glad to sell it at that.

Cross-examination.

By Mr. Bronson:

3167 Q. You and Rydell were partners?
A. Yes, sir.
Q. In the garage business down there, and when you had this settlement you figured your partnership business, didn't you, had a final settlement on the whole partnership business?
A. Yes, sir.

Q. Had a settlement on all the partnership business?
A. Well we had a kind of a settlement.
Q. And this that you have been talking about $1,500, was the net amount coming to you?
A. Yes, sir.
Q. After everything was fixed up?
A. We had some accounts standing out after that.
Q. That was owing and coming to you?
A. Yes, sir.
Q. He assumed all that, didn't he, Mr. Rydell?
A. We had some accounts, some farmers owed us there. We collected half each, of those.
Q. Did you get some after that?
A. I got some.
Q. You got some paid to you afterwards?
A. Yes, sir.
Q. How much?
A. I couldn't say how much.
Q. $1,000.
A. No, it wasn't that much.
Q. Less than that?
A. Yes, sir.
Q. Did you owe some accounts?
A. We owned some, too.
Q. Mr. Ryfell paid those too?
3168 A. We both had to pay some.
Q. That is, before you settled the partnership business?
A. Well, we didn't—I think we had some before and after that too.
Q. How long were you in the partnership business down there?
A. Well, it is from the spring of 1912 until the time I sold out in 1913.
Q. Mr. Rydell ran the business?
A. Yes, sir.
Q. He kept the books and kept the accounts?
A. He kept both of them.
Q. He looked after that?
A. Yes, sir.
Q. And when you settled up, you dissolved partnership?
A. Yes, sir.
Q. And when you finally fixed it with him, the balance coming to you in accordance with your agreement, you say was $1,500?
A. Yes, sir.
Q. And you got some money after that, some accounts coming to to you after that?
A. We had some accounts out.
Q. And you got some of them afterwards?
A. I got some, yes, sir.

Redirect examination.

By Mr. Palmer:

Q. Did Rydell ever pay you one penny for that half of that garage?

3169 Mr. Pinkney: We object to that as having been asked and answered.

A. I can't remember that he did.

Mr. Palmer:

Q. And was this $1,500 paid to you by his assuming your half of the outstanding indebtedness?
A. I can't remember that.
Q. Did he assume your half of the debt?
A. As far as the money I had.
Q. As far as the $1,500 went?
A. Yes, sir.
Q. Did he pay you any money?
A. I can't remember that, if he did pay me any.
Q. Well, what is your best recollection in regard to that? Did he pay you any money, or did he simply assume your half of the debt?

Mr. Pinkney: I object to that as already answered, a mere repetition, already gone over. The witness stated he didn't know and couldn't recollect.
A. I can't remember that he did pay me any money.

Mr. Bronson:

Q. You don't remember much about that, do you?
A. No, sir, I do not.

3170 Edward Joy, being sworn in behalf of defendant, testified as follows.

Examined by Mr. Palmer:

Q. What is your age?
A. 54.
Q. What is your business?
A. Farmer.
Q. How long have you been a farmer?
A. All my life.
Q. Where do you live?
A. Minnesota, township of Campbell, Wilkin County.
Q. Does the county of Wilkin in Minnesota adjoin the county of Richland in North Dakota on the west?
A. Yes, there is a river between.

Q. The Bois de Sioux river lies between them and forms the boundary line?

A. Yes, sir.

Q. Between the two states and between these two counties?

A. Yes, sir.

Q. What township and range is in the town of Campbell?

A. The town I live in is the fractional township of the township of Campbell. It is Township 130, Range 47.

Q. It is the fractional Campbell township?

A. Yes, sir.

Q. The full township of Campbell lies easterly of this fractional portion?

A. Lies east?

Q. So you live in what might be called West Campbell township, Wilkin County, Minnesota?

3171 A. Yes, sir.

Q. On what part of section 2 do you live?

A. Northeast quarter.

Q. Do you own that land?

A. Yes, sir.

Q. How long have you owned that land?

A. About 26 years.

Q. How long have you farmed the land?

A. I have farmed it 26 years.

Q. I take it you came upon this northeast quarter of section 2 about the year 1890?

A. I think so.

Q. Did you live in the same locality immediately prior to that time?

A. Yes, sir.

Q. Where?

A. I lived in the township of Campbell about 5 or 6 miles from there that summer. I have always lived in the township of Campbell.

Q. You say the summer you moved onto this land you lived about 5 or 6 miles south of that point?

A. Southeast.

Q. And in what section?

A. I think it was section 30, township of Campbell.

Q. That is in the full township of Campbell?

A. Yes, sir.

Q. How long did you live on section 30?

A. Well, I lived there about two years, I think.

Q. And prior to that time where did you live?

A. I lived in section 2, my father's place.

3172 Q. That is the same section 2 where you now live?

A. Yes, sir.

Q. What portion of that section?

A. Southeast quarter.

Q. That is the quarter just south of your present farm?

A. Yes, sir.

Q. Did your father own that?
A. Yes, sir.
Q. Did he own some other land adjoining it?
A. He owned the quarter section across the road in Section 11, northeast quarter of section 11.
Q. When did your father go upon this land?
A. In 1879.
Q. And you lived with him?
A. Yes, sir.
Q. And did he continue to reside there and make it his home?
A. Yes, sir.
Q. And did you live there continuously until those two years that you resided in Section 30?
A. Well, I was away about two or three months one summer, that as all.
Q. Otherwise, your residence was continuous in section 2 from 1879 to the present time?
A. Yes, sir.
Q. How old were you when your father came to this land in section 2?
A. I think 15.
Q. Your father owned this particular quarter section that you have last described?
A. Yes, sir.
3173 Q. And it was the family home?
A. Yes, sir.
Q. How far is the Bois de Sioux river from your place and your father's place?
A. Well, it is, from the east line it is pretty near a mile. From the west line it *i*t a little over a half a mile.
Q. It is across the northwest quarter of section 2 and a small portion of the northeast quarter of section 3?
A. Yes, sir.
Q. How far is the Rabbit River from your buildings?
A. It is a little over a mile, about a mile and a quarter, not quite a mile and a quarter north.
Q. In what direction?
A. North and northwest.
Q. I didn't ask you in what direction the Bois de Sioux river was from your place; I assume it is west?
A. West.
Q. How far is the point of confluence of the Rabbit river with the Bois de Sioux river from your place?
A. It is about a mile over a mile.
Q. In what direction?
A. Northwest.
Q. Have you observed the characteristics and operation of the Bois de Sioux river and the Rabbit river during all of these years of your residence there?
A. Yes, sir.
Q. What time in the year 1879 did you- father come to this place?

A. About the 6th of April, around the 1st of April.

3174 Q. Can you recollect the condition of the Bois de Sioux river that spring?

A. In the spring of 1879, it was dry, and the Rabbit river was nearly dry, in the year 1879, there was no water in either one of them, much.

Q. Was that a comparatively dry spring?

A. That was the first year we were in this country, but it was a dry summer, well, there was no water in the river in the spring either.

Q. Have you a recollection as to the spring of 1880?

A. Yes, sir.

Q. Will you state the condition of the Bois de Sioux river that spring?

A. Well, it was over the banks in the spring, in April and May.

Q. Where, at what point was it over the banks?

A. It was over the banks all the way from where the Rabbit empties into it, south as far as I know.

Q. South as far as you had any observation?

A. Yes, sir.

Q. It was over the banks?

A. Yes, sir.

Q. That is, commencing at the confluence of the Rabbit and extending southward?

A. Yes, sir.

Q. How far over the banks that spring was the Bois de Sioux?

A. Well, west of me it was about a mile wide in 1880.

Q. Did it come over onto your land?

A. No, sir, not that spring, it did not.

3175 Q. But it was about a mile wide, you say?

A. Close to a mile wide; that is, not a mile on either side, but about a half a mile on either side, a little over making it half a mile in Dakota and half a mile in Minnesota, what I mean by a mile wide.

Q. How far to the north did that width of a mile extend?

A. Well, when it got to the Rabbit it wasn't quite as wide, from there north it wasn't as wide, south it was wider.

Q. And did you go down to the south from your place, so that you observed the river southwardly from you?

A. Yes, sir.

Q. How far south did you observe it?

A. Within 2 or 3 miles south.

Q. Would that bring you down past the side of the present town of Fairmount?

A. About east of the town of Fairmount.

Q. Will you state its conditions southwardly from your place down to the point east of the present town of Fairmount?

A. It was over the banks all the way, some places it was wider than others.

Q. What was the greatest width?

A. I don't know, I guess some places, about where the Great

Northern bridge is now, I think it was about a mile and a half wide at that point.

Q. The Great Northern bridge appears to be over near the south line of section 15?

A. Yes, sir.

Q. Of the town of Fairmount, 130-47; and you say at that point it was about——

A. It was about a mile and a half wide.

3176 Q. I assume there was no Great Northern railroad or grade there at that time?

A. No, sir, there was no wagon bridge.

Q. No wagon road or bridges?

A. No, sir.

Q. No Soo railroad there?

A. No, sir.

Q. Did you observe the water further to the south? Could you see it all over the country?

A. That is in the spring?

Q. Of 1880.

A. Yes, sir.

Q. And looking down the Bois de Sioux river, what was its width as you proceeded to the south?

A. Well, I think down to about where Mud Lake was it was all water all through there. I couldn't tell the width of it. You could see water, we went down there many times fishing.

Q. Did it seem to be wider down there than it was opposite the present town of Fairmount?

A. I think about the same, something the same.

Q. A mile and a half, you think?

A. Yes, sir.

Q. This Mud Lake, is that the Mud Lake that has been spoken of as on the east side of section 33, in township 130?

A. I don't know.

Q. It is down there by what is called the Swivel claim. Perhaps I can make it plain to you——

A. It is near the country line about—it runs near to the country line and runs a mile north of the country line.

3177 Q. About how far south of the town of Fairmount, the present town?

A. It is about a mile or two south of Fairmount, where Mud Lake is.

Q. Did you observe the operation of the Rabbit river that spring?

A. Yes, sir.

Q. What was its condition.

A. Well, when the river was high, when the Rabbit river was full to the banks, it cut across the country and ran into the Bois de Sioux river, and then runs south until it fills up, and then runs north.

Q. Did it do that in the spring of 1880?

A. Yes, sir.

Q. Now, the Rabbit river has its confluence with the Bois de Sioux, evidenctly, near the south line of section 34, in your township?

A. No, in the township of Brandrup.

Q. And from there passing up-stream, what is the direction?

A. Where it makes the turn here about 40 or 60 rods from where the two rivers go in, where it makes the long bend, the water leaves the river in high water time and runs southwest.

Q. The river itself from its point of confluence, seems to run westerly for a very short distance, and then makes a rather abrupt turn to the north?

A. Yes, sir.

Q. That is in section 34?

A. That is in section 34.

Q. And then passing up-stream, it seems to run to the north-
3178 eastwardly through section 35?

A. Yes, sir.

Q. Is it at the turn in section 34 that it overflows?

A. That is at the turn in section 34 where the river comes and turns south, and makes a turn, and goes back north. That is where it leaves the Rabbit river and goes north; this big turn has a low bank and it cuts across.

Q. Cuts across southwestwardly?

A. Yes, sir, in high water she runs across there until the river drops?

Q. What is the course of that overflow?

A. It runs southwest into the Bois de Sioux.

Q. And after reaching the Bois de Sioux, what course does the water take?

A. I have seen it run south as long as six days in high water time.

Q. Runs southwardly toward the present site of Fairmount?

A. And after the rapid drop, it runs north.

Q. After the rapid drop it again goes north?

A. Yes, sir.

Q. Its natural course is north in times of ordinary water?

A. Yes, sir.

Q. How long did the river stay up in this spring of 1880?

A. 1880, it didn't stay up only about, I should judge 10 or 12 days. Of course the water was over the land more than that, it was over the banks quite a while, but it went down pretty quick that spring.

Q. How long would you say it was over the banks?

3179 A. I should say ot was over the banks 2 or 3 weeks.

Q. And did it stay up throughout the summer?

A. That summer it came up again in June. We had awful heavy rains in 1880 in June, and the Rabbit river raised and flooded the country again, and it was wet that summer until August, and we had no more rain, and it dried up.

Q. And in June you had this heavy rain, and this flooding of the Bois de Sioux river, what was the condition of the Rabbit river?

A. It was awful high.

Q. Did the water in the Rabbit river that summer leave its banks and flow away southwesterly?

A. Yes, sir, in the spring, I think, and that summer it did.

Q. That summer of 1880, did that flood adjacent lands along the Bois de Sioux? Southwardly from the Rabbit?

A. Yes, sir, it did, but it didn't stay up long.

Q. About how wide did the Bois de Sioux get?

A. In the summer it didn't get as wide as in the spring.

Q. You have stated it was a mile wide, about, up in this locality?

A. It was a mile, about a mile and a half wide in the spring.

Q. About what was the width in the summer?

A. In the summer it was only up a mile, a mile in some places. It didn't stay up so long that summer, the rains didn't last so long.

Q. What about the spring of 1881, to your best recollection?

3180 A. Spring of 1881 it was worse, there was more water.

Q. What was the condition of that winter as to snowfall?

A. We had a heavy snowfall that winter.

Q. About what time in the spring of 1881 did you have the flood conditions?

A. Well, I think it was about near the middle of April before it started to thaw that spring. It was an awful late spring.

Q. Will you describe the condition of the Rabbit River?

A. It was awful wide, it was covering over the whole country, ran south again just the same as it did the other spring but it was higher, more water.

Q. Did the water again leave the banks, of the Rabbit river and run southwardly from this bend, this confluence?

A. Yes, sir.

Q. How long did the water continue to run southwardly that spring?

A. Quite a while, I should judge 4 or 5 days, all the water seemed to be going south, it was so high.

Q. How high was the Bois de Sioux?

A. There was places that spring west of my place where my folks lived it was probably a mile or a mile and a half. Further south it was two miles and a half wide.

Q. How was it from your place down south to the point where Fairmount is now located?

A. Well, it was — it looked like a sea to me, like a lake of water.

Q. A mile to a mile and a half wide?

A. Yes, sir.

3181 Q. How was it still south from there?

A. As far as I could see it was water.

Q. How wide?

A. That covered the whole country in there, most of it.

Q. Did you see the flood conditions of 1916?

A. Yes, sir.

Q. Will you compare those with what you saw there in 1881?

A. Well, in 1881, the spring of 1881, the water was higher than it was — in the Rabbit river and in the Bois de Sioux too, than it was in 1916.

Q. Did the water extend over more territory in 1881 than it did in 1916?

A. In the spring of 1881 it did.

Q. Did you observe the water conditions clear down from the Rabbit river to Traverse Lake that spring?

A. No, sir, I never was that far south. As far as we could hear, it was all water.

Mr. Bronson: Objected to as hearsay, not a response to the question.

A. I didn't go down more than 5 or 6 miles south, I didn't know anything further on.

Mr. Palmer:

Q. Did you observe it down at this point that you call Mud Lake?

A. Yes, sir.

Q. How wide was it there?

A. Well, it was pretty wide, about as wide as it was anywhere, and wider, I guess some places about two miles wide, I should judge.

Q. How long did the high water conditions stay up that spring of 1881?

3182 A. Stayed up about 6 weeks, the Bois de Sioux stayed up there.

Q. Was any of the land along there cropped that year?

A. No, there was no land broke up. There was very few pieces of land broke up along the river, of course they wouldn't be worked. There was only a few pieces that was broken, and they was all north of the line of Fairmount here further on north. There was none broken up south that I know of.

Q. How was it through the summer of 1881?

A. It was a pretty wet summer.

Q. Did the water stay up pretty well?

A. Yes, sir, we had lots of rain in the summer. Along through June we had an awful wet time, and the river was full of water again.

Q. Was the Rabbit river full of water?

A. Yes, sir.

Q. But did it go over its banks again that summer?

A. It did, went over the banks where the two rivers empty into each other.

Q. And did the water again flow southwardly?

A. Yes, sir, it has to go south when it goes over the banks.

Q. Until about what time that summer of 1881 did the Bois de Sioux river stay up?

A. Well, the Bois de Sioux river was level banks and over the banks a little all summer that summer.

Q. And how was it as to water conditions on the adjacent land?

A. There wasn't much water on the land along the Bois de Sioux that summer, not the summer of 1881.

Q. The spring of 1882, Mr. Joy, can you tell us something 3183 about that?

A. We had floods in the spring again.

Q. Of 1882?

A. Yes, sir.

Q. How was the snowfall that winter?

A. Lots of snow.

Q. And about what time in the spring of 1882 did the floods come?

A. I think they started in April.

Q. What was the condition of the Rabbit river that spring as to overflowing its banks?

A. It was high.

Q. Did it go over its banks at this time you speak of?

A. Yes, sir.

Q. And which way did the water run?

A. Ran southwest.

Q. And when the water would run southwest as you speak of, would it turn the course of the Bois de Sioux to the south?

A. Well, I have seen the whole of the water in the Bois de Sioux run south in high water time, it all goes south, and when the Rabbit drops, it turns and goes back north.

Q. What do you mean by filling up?

A. It fills up the low land along the Bois de Sioux river.

Q. To the south?

A. Yes, sir.

Q. And after the low land is filled up and the Rabbit river drops then the water again goes in its natural course?

A. When the Rabbit river drops the water starts north.

Q. But as long as the Rabbit river stays up, does the water have its course in the Bois de Sioux to the north?

3184 A. Yes, sir, I have seen it while the water was in the bed of the Rabbit but not over its banks. When it goes over the banks, it dams up the Bois de Sioux and it dosen't run north; of course it runs some at times, but it don't run as good.

Q. When the Rabbit river goes over its banks, does it apparently dam up the Bois de Sioux set it back?

A. Yes, sir, it does.

Q. Which is the larger stream?

A. The Rabbit is the larger stream.

Q. Which, apparently, has the greater velocity of flow?

A. The Rabbit.

Q. Which has the higher banks and the deeper bed?

A. The Rabbit river.

Q. And which in times of high water carries the greater volume of water?

A. The Rabbit river carries the most.

Q. What would you say as to the comparative volume of water carried by the Rabbit river as compared with that of the Bois de Sioux?

A. There is places in the Rabbit 20 feet deep or deeper when it is high water.

Q. I wish you would compare the volume of water it carries when it is full with the volume of water carried by the Bois de Sioux, if you can?

Mr. Pinkney: We object to that, this witness has shown no qualification to measure capacity of water channels, or anything else.

A. Well, the Rabbit river is higher banks, and it is a wider river, and there is more water goes down the Rabbit river than the Bois de Sioux, unless the Bois de Sioux covers the whole country,
3185 then the most runs in the Bois de Sioux. Generally the most of it goes in the Rabbit river.

Q. Can you tell us anything about the summer of 1882?

A. Yes, sir.

Q. As to whether or not you had flood conditions?

A. It was wet that summer, we had a wet summer right along.

Q. Can you tell me as to whether the Rabbit river overflowed its banks in the summer of 1882?

A. Well, I don't remember how many times, but I know the river was over the banks a few times in the summer, I can't remember how many times.

Q. What was the effect upon the Bois de Sioux river?

A. Well, it always holds it back when the Rabbit river is high.

Q. How high did the Bois de Sioux river get that summer in the country west of your place?

A. In 1882?

Q. Yes.

A. It was pretty high, pretty wet in the summer too.

Q. Did it overflow the adjacent land?

A. Yes, sir.

Q. The spring of 1883, do you call that to mind?

A. It was a wet spring too.

Q. What was the condition of the Rabbit river as to over flow?

A. It overflowed.

Q. At this point that you mentioned?

A. Yes, sir.

Q. And which way does the water run?

A. It always runs southwest when it overflows there.

3186 Q. What effect did that have upon the Bois de Sioux river?

A. It held it back while the Rabbit river was high.

Q. And to what width did the Bois de Sioux river get that spring?

A. It was just about as wide as it was the year before.

Q. And did you observe the conditions from there to the south.

A. Yes, sir.

Q. That spring; how wide was the river down opposite the site of Fairmount?

A. It was wide all over the country that spring.

Q. And did you observe the conditions down by the place called Mud Lake?

A. Yes, sir.

Q. How wide was it there?

A. About a mile and a half to two miles wide.

Q. How long did the flood conditions pervail in the spring of 1883?

A. Well, it stayed up quite a while, I can't remember just how long; it was up a long time in the spring.

Q. Did you have flood conditions that spring of 1883?
A. Well, the land was all covered with water that summer, we had lots of rain, it was pretty wet.
Q. Was this Bois de Sioux river out of its banks?
A. Well, sometimes.
Q. And the Rabbit river?
A. Yes, sir.
Q. In 1884, do you call that to mind?
A. 1884, I think that was flooded in the spring that year, I don't remember the summer part of it, the spring part of it, there
3187 was flood in the spring.
Q. Flood conditions similar to those you have described for the previous springs?
A. Yes, sir.
Q. 1885?
A. We had lots of snow that winter. I don't remember that it was quite as wet that spring, but it was pretty wet.
Q. 1886?
A. I don't know as it was quite as bad a condition in 1886.
Q. 1887?
A. It was pretty wet that spring too.
Q. Did you have these flood conditions in the spring of 1887?
A. Yes, sir.
Q. About what time that year?
A. Well, in the spring, I can't remember what time it did thaw up.
Q. How about the Rabbit river, was that full?
A. Yes, sir.
Q. What effect did that have on the Bois de Sioux?
A. It held it back when it was full.
Q. Did the Rabbit river overflow its banks that year?
A. Yes, sir, I think it did that spring too.
Q. Did the Bois de Sioux overflow its banks?
A. Yes, sir.
Q. Did you have any summer flood in 1887?
A. We had lots of rain.
Q. Can you call to mind any particular flood?
A. No, I cannot.
Q. 1888, spring of 1888, do you call to mind?
A. It was pretty wet.
3188 Q. Was that wetter than the preceding spring?
A. Yes, sir, it was.
Q. What was the condition of the Rabbit river that spring of 1888?
A. It was high.
Q. Did it overflow its banks?
A. Yes, sir.
Q. At this turn you have spoken of?
A. Yes, sir.
Q. And the water run to the southwestwardly?
A. Yes, sir.

Q. What effect did it have on the Bois de Sioux river?
A. It held it back.
Q. What width was the water of the Bois de Sioux that spring?
A. Well, it was pretty wide.
Q. About as you have described in the other springs?
A. Yes, sir.
Q. And how was it southwardly from there?
A. It was all over the country south.
Q. Now at the time when this Rabbit river would set the water in the Bois de Sioux back as you have described, what were the conditions northerly of the confluence of the Rabbit with the Bois de Sioux?
A. Well, there was water, it was all water.
Q. Was the Bois de Sioux as wide to the north of the Rabbit?
A. No, it never gets as wide north of the Rabbit as it does south.
3189 Q. It does not?
A. Not unless it is the flood in the spring, generally.
Q. Are the banks somewhat higher, too, after the confluence with the Rabbit?
A. Yes, sir.
Q. I will not ask you about the specific years from 1888 on, but beginning with the year about 1890, what were the conditions as to wet and dry years?
A. We didn't have much wet in this country in 1890.
Q. How long did the dry season continue from 1890 on?
A. I think 5 or 6 years we had dry years.
Q. Going on to the spring of 1897, do you recall that spring?
A. Yes, sir.
Q. What was the condition of the Rabbit river that spring?
A. It was higher in 1897 again.
Q. Did it overflow its banks?
A. Yes, sir.
Q. And the water ran to the southwestward?
A. Yes, sir.
Q. What was the condition of the Bois de Sioux?
A. It went over the banks, the Bois de Sioux.
Q. How wide did the Bois de Sioux river get that spring?
A. It got as wide as it did other years.
Q. The other wet years you have described?
A. Yes, sir.
Q. How far to the south did those conditions extend?
A. As far as I know of, we could see.
3190 Q. Do you know whether the land south of this Mud Lake that you have spoken of was flooded that spring of 1897?
A. I think it was.
Q. And to what width, about?
A. I don't know, down there.
Q. Through the summer of 1897 did you have any flood?
A. Well, I guess we did have quite big rains, some of it.
Q. About what time of the season?

A. I don't know just exactly what time.

Q. Did the wet conditions prevail there generally through the season?

A. Yes, sir.

Q. How did that affect the crops?

A. Where I lived it didn't affect it much?

Q. How did it along this river bottom or valley?

A. Hurt the crops.

Q. What is the next wet year that you call to mind, Mr. Joy?

A. Well, 1916, 1915 was wet.

Q. Describe the conditions in 1915, how was the spring of that year?

A. The spring of that year, it wasn't so very wet in the spring. It wasn't so bad, there was lots of water, but the water went down and we could seed our land.

Q. And you seeded the land?

A. Yes, sir.

Q. When did the rains begin in 1915?

A. Where I live we wasn't bothered with the rains. Fur-
3191 ther south of us, they had more rain than we did. We didn't lose our crops, it was dry where I lived. South they had pretty big rains, where I live there was no land drowned out in 1915.

Q. What condition was the Rabbit river in that summer?

A. It came up a few times, and through the summer it raised a few times.

Q. At what time in the summer was the first raise?

A. Well, I think the range where we lived, we didn't have no big rain that summer, but the river rose, it come from the south, I don't know where it come from, it come from the southeast in the Rabbit river.

Q. The Rabbit river comes from the southeastwardly at your place?

A. It comes from the southeast, runs north.

Q. And west?

A. Yes, sir, and turns west.

Q. When was the first raise on this Rabbit river?

A. I think in July it rose. It was pretty low, and July it come up, and we had no rain where I lived, but the river rose.

Q. Then in July, 1915, without a rain in your particular locality, you observed the Rabbit river rising?

A. Yes, sir.

Q. What effect did that have on the Bois de Sioux?

A. Well, it didn't have no effect on it at that time. It wasn't high enough to have any effect on the Bois de Sioux at that time.

Q. It didn't run over the banks?

A. No, sir.

Q. What was the condition of the Bois de Sioux that sum-
3192 mer?

A. There wasn't no water in the Bois de Sioux very much in the first part of the summer, but in the summer it started to run,

and in the fall it run. I know there was no water over the banks in 1915 west of me, nor no water in the river very much.

Q. And what was the condition in the fall of 1915 as to rainfall and wet conditions?

A. Where I lived we didn't get much rain. It seemed where we lived we didn't get very much rain. It wasn't exactly dry, but it wasn't no heavy rains.

Q. The spring of 1916, Mr. Joy, what did you observe as to the water in the Rabbit river?

A. Well, it was high in the spring for a while, and went down. It didn't stay up much that spring.

Q. Did it go over the banks that spring?

A. No, sir, it did not any place I know of in the first part of the spring, but in the summer it did.

Q. About what time in the summer?

A. Well, all through June, every week or so we would have high water.

Q. When the water was high in the Rabbit river, did it overflow its banks as you have stated?

A. That was the first time I ever saw the Rabbit river overflow in June, that year.

Q. Of 1916?

A. Yes, sir.

Q. Which way did the water run?

A. It runs southwest.

Q. Which way did the water run in the Bois de Sioux?

3193 A. It is pretty hard to tell which way it would run, it was filled up so high, standing all over. At that point there it was hard to tell which way it was running where the two rivers come in.

Q. Through the summer of 1916, did the waters again rise in the rabbit river?

A. Rose two or three times during the summer.

Q. And at the time it raised, what effect did it have on the Bois de Sioux river?

A. Well, it run, when the Rabbit river is over the banks at that point I told you, it runs southwest and runs into the Bois de Sioux.

Q. How did the volume of water in the Rabbit river in the season of 1916 compare with the volume of water carried in other years?

A. Well, there was a good deal of water going down the Rabbit river in 1916, and I saw—I never saw so much water, that is, keeping it up all summer that long.

Q. What is your recollection as to the rainfall that summer?

A. More rain than I ever saw in one year?

Q. What was the condition of your land?

A. The condition was I couldn't hardly drive a team across it. I could plow a furrow, never plowed a furrow last year.

Q. By last year you mean 1917?

A. 1916, I never plowed a furrow.

Q. Did you put in a crop?

A. I put a crop in this year, I had to disk it in.

Q. Did you put in any crop in 1916?

3194 A. Yes, sir, I did, we could sow our land, it was dry in seeding time, about two weeks before the rain started, and we couldn't do any more.

Q. Did you get any crop in 1916?

A. It was so small I didn't know I got anything.

Q. What was the reason for it?

A. It stood in water all summer, so wet we couldn't hardly drive across the land.

Q. Was this overflow from the river?

A. It never comes from the river on my land.

Q. Simply the water that fell?

A. Yes, sir.

Q. What was the condition of the farms around you?

A. They was all wet, couldn't nobody hardly any of them work their lands.

Q. Some crop failures on account of wet conditions in your locality?

A. There was a good many acres that couldn't be put in this spring, 1917.

Q. Were those on land away from this overflow of the river?

A. Yes, sir.

Q. What was the condition as to roads in 1916?

A. There was no roads part of the time.

Q. What was the reason?

A. Rain washouts.

Q. Washouts of what?

A. Washed the road out, the grades on these ravines and waterways and washed the roads out.

Q. Have you held some official position in your township?

3195 A. Yes, sir.

Q. What?

A. I am on the town board, township of Campbell.

Q. What was the situation as to bridges in your township in 1916?

A. We had to put them in.

Q. About how many were washed out?

A. We had—we don't have in our township any big bridges across the Rabbit. The Rabbit river where the bridges are is the township of Brandrup. We have small bridges, culverts of wood, and we had to fix them all the time. Every week or two we would be called out to fix up some culverts and roads washed away.

Q. Were some of the bridges across the Rabbit river washed out?

A. Yes, sir, and they were taken out twice, both of them. Two of them were taken out in June, the water took them out in June. One of the mail routes come out here, and stopped up the road 5 or 6 weeks.

Q. Took them out twice?

A. Yes, sir, across the Rabbit river.

Q. Now, in recent years what do you know as to ditches into the Boix de Sioux river in your locality there?

A. We have no ditches running straight into the Bois de Sioux only wagon road ditches.

Q. And where are those wagon road ditches?

A. They are all on section lines, the water runs into the river from the section lines.

Q. There is water on each section line, a road?

A. Yes, sir.

Q. And how many ditches on the roads?

3196 A. Ditch on each side of the road.

Q. Those take the water down into the Bois de Sioux river, do they?

A. Yes, sir.

Q. And is there one on practically every section line, and road?

A. On every section line all through the township of Campbell except the line of the township of Brandrup and Campbell on the north side of my land, there is none there, the rest is all ditched.

Q. How is it for the south, in west Taylor township?

A. On the county line on the south there is no ditch running there, all the rest of the roads are ditched.

Q. What do you know as to the ditching into the Rabbit river in recent years?

A. Well, there is a good many state ditches into the Rabbit river.

Q. And county ditches and judicial ditches?

A. No, there is no—there are county ditches.

Q. And have those been put in in recent years?

A. Yes, sir.

Q. Large ditches?

A. Yes, sir.

Q. Have you observed any change in the condition of the Rabbit river since the ditching operations into it?

A. Yes, sir.

Q. What is it?

A. Well, the river raises quicker and there is more water whenever we have rain, rises quicker and fills her up quicker, and more water than we had before.

3197 Q. Does it stay up longer?

A. It stays up longer.

Q. When it rises and overflows the banks, it has the effect you mentioned on the Bois de Sioux river?

A. Yes, sir.

Q. Mr. Joy, it has been given in testimony here, that these railroads, the Soo and Great Northern, were located in 1884. Prior to the time those railroads were built across there and prior to the time the wagon roads, the va-ious wagon roads were built with bridges over them, did you observe any difference in the flow of water to the north?

A. Well, it takes the river longer to go down. The Soo and the Great Northern hold the water back. Of course there is only a small opening for the bridges to let the water through. In the early days there was no railroad bridges and grades, and the water could go across the prairie quicker than now.

Q. Do those railroad bridges and grades serve to hold the water back more than it did in a state of nature?

Mr. Pinkney: Objected to as leading and asking for a conclusion.

A. Yes, sir.

Mr. Palmer:

Q. Has that been your observation, observing the water both before and after the construction of these railroad grades and bridges?

A. Yes, sir.

Cross-examination.

By Mr. Bronson:

Q. Mr. Joy, have you stated about these different years
3198 about the rainfall and the flood conditions that you observed in the Rabbit river from recollection?

A. Well, I have been living right here and seeing them every year.

Q. I asked you if you stated what you have in your testimony from your recollection?

A. Yes, sir, I remember, I have seen them every year.

Q. You haven't any record of these things?

A. No, sir.

Q. Or any record of the rainfall?

A. No, sir.

Q. Or any record of the height of the water in the Rabbit river or in the Bois de Sioux?

A. No, sir, I have kept no record of it.

Q. It appears that your first recollection extends back to the time that you were in your sixteenth or seventeenth year, is that correct?

A. Yes, sir.

Q. You have a vivid recollection of the years 1880 and 1881?

A. I do.

Q. How were the seasonal conditions of 1893, would you say?

A. Well, we had a wet year.

Q. You had a wet year in 1893?

A. We had a wet year in our country where I live?

Q. Was the Bois de Sioux river out of its banks in the year 1893?

A. Yes, sir.

Q. In the spring of 1893?

A. Yes, sir, it was.

3199 Q. Did it flood this country east of Fairmount and down toward White Rock in the year 1893?

A. In the year 1893, the river was running all summer, and I guess we had one year that the river run and it didn't freeze to the bottom.

Q. Did it flood any crops that year, 1893?

A. We didn't have nothing to flood, we didn't have any crops in.

Q. Weren't there farms in North Dakota along the Bois de Sioux that were in cultivation that year?

A. There was.

Q. And weren't there crops raised on these farms in North Dakota, along the Bois de Sioux in the year 1893?

A. There wasn't any on any of the low land, because there wasn't any land broken up.

Q. There was no land broken?

A. Not on the low land.

Q. Didn't Peter D. Smith have some land broken up?

A. Yes, but Peter D. Smith didn't live on it in the lowland.

Q. Does he own any of the low lands?

A. He does, but his homestead was back.

Q. Did Wallace J. Taylor have any lands flooded that year?

A. I don't know anything about Wallace J. Taylor, I was never on his farm.

Q. Was the Gajer land flooded at that time?

A. Joe Gajer didn't live in this country.

Q. Was Mr. Lundberg's land flooded that year?

A. I don't know him.

Mr. Palmer: He is asking you about 1893.

3200 A. 1893, he said 1883.

Q. He asked you what the seasonal condition was in 1893.

A. He said 1883 first. I made a mistake, I thought he said 1883.

Mr. Bronson: Read the question.

(The question is read by the reporter).

Q. What have you been referring to?

A. I meant 1883.

Q. I have been asking you about the year 1893.

A. 1893, I don't know anything about Wallace Taylor's land in 1893, or Gajer's either.

Q. Do you know anything about the seasonal condition in 1893?

A. I do.

Q. What was it, a dry year or a wet year?

A. We had a good crop where I lived.

Q. Did the Bois de Sioux river overflow in the year 1893?

A. I think it did in the spring.

Q. Did it overflow the land along the Bois de Sioux in 1893?

A. No, I don't think it did.

Q. Did they produce crops along the Bois de Sioux river on lands adjacent to the Bois de Sioux river in the year 1893?

A. They did on our side, on the most of it.

Q. Did they on the North Dakota side?

A. The road I travel on I saw there was crops, where I come to town, but south of Fairmount, I never go south of Fairmount, and I don't know anything about the land south.

Q. You saw crops raised on the North Dakota side ad-

3201 jacent to the Bois de Sioux river in 1893?

A. Yes, sir, I seen crops raised.

Q. What were the conditions in 1894, was it a dry year or a wet year?

A. It was neither wet nor dry.

Q. Did the Bois de Sioux river overflow in the year 1894?

A. I don't think so.

Q. Did you see crops raised on the North Dakota side on lands adjacent to the Bois de Sioux river in the year 1894?

A. I did.

Q. That means crops of wheat, oats, barley and flax or any of them, doesn't it?

A. Crops, yes, sir.

Q. And threshed and harvested?

A. Yes, sir.

Q. You were living on this farm in the year 1895?

A. Yes, sir.

Q. And did the Bois de Sioux river overflow in the year 1895?

A. I don't think it did, to destroy any crops.

Q. You saw crops raised, harvested and threshed on lands in North Dakota adjacent to the Bois de Sioux river in 1895?

A. Yes, sir.

Q. 1896, did the Bois de Sioux river overflow?

A. I guess not.

Q. You saw crops raised, harvested and threshed on lands adjacent to the Bois de Sioux river in North Dakota that year?

A. Yes, sir.

3202 Q. In 1897 the Bois de Sioux River overflowed in the spring, did it not?

A. Yes, sir, I think so, in the spring. I am not sure, but I think it did.

Q. How wide did it get in the spring of 1897?

A. I don't know how wide it got.

Q. Did you see crops raised, harvested and threshed in the year 1897 on lands adjacent to the Bois de Sioux river in North Dakota?

A. Yes, sir.

Q. That was a good crop year wasn't it?

A. It was where I lived, good crops.

Q. And was, as you could see when you went to Fairmount North Dakota?

A. Yes, sir.

Q. At that time these lands along adjacent to the Bois de Sioux river were getting pretty fairly well settled up. In the year 1898, did the Bois de Sioux river overflow in the spring?

A. I don't think it did.

Q. You saw crops put in, harvested and raised there, on these North Dakota lands in the year 1898?

A. Yes, sir.

Q. In the year 1899 did the Bois de Sioux river overflow?

A. I don't think it did.

Q. Your observation is that it did not? That year you saw crops raised, harvested and threshed on lands adjacent to the Bois de Sioux river in North Dakota?

A. Yes, sir.

Q. In the year 1900 did the Bois de Sioux river overflow?

3203 A. I don't know whether it did, I don't think so.

Q. Your observation is it did not? In the year 1900 did you see crops raised, harvested and threshed on lands in North Dakota adjacent to the Bois de Sioux river?

A. Yes, sir.

Q. In the year 1901 did the Bois de Sioux river overflow?

A. I don't think so.

Q. That year did you see crops raised, harvested and threshed on lands in North Dakota adjacent to the Bois de Sioux river?

A. Yes, sir.

Q. 1902, did the Bois de Sioux river overflow?

A. I don't think it did.

Q. In 1902 did you see crops raised, harvested and threshed on lands adjacent to the Bois de Sioux river in North Dakota?

A. Yes, sir.

Q. In 1903 did the Bois de Sioux river overflow?

A. I guess not.

Q. And that year did you see crops raised, harvested and threshed on lands in North Dakota adjacent to the Bois de Sioux river?

A. Yes, sir.

Q. In the year 1904 did the Bois de Sioux river overflow?

A. I don't think so.

Q. Your recollection is that it did not?

A. No, sir.

Q. In that year did you see crops, harvested, raised and

3204 threshed on lands in North Dakota adjacent to the Bois de Sioux river?

A. Yes, sir.

Q. What were the seasonal conditions in the year 1905?

A. Well, so many years I can't remember every one of them. I think there was crops raised that time. There are lands along the Bois de Sioux that won't raise a crop every year, but some years do.

Q. In 1905, did the Bois de Sioux river overflow?

A. No, I guess not.

Q. You saw likewise crops raised, harvested and threshed on this North Dakota land adjacent to the Bois de Sioux river in that year?

A. Yes, sir.

Q. 1906, did the Bois de Sioux river overflow?

A. Might probably, some of the springs it might have overflowed in the spring. I don't think it did any of the time in the summer to destroy any of the crops.

Q. Have you any definite recollection as to the Bois de Sioux river overflowing in the spring of 1906?

A. No, unless it was in the spring.

Q. Is it your recollection now that the Bois de Sioux river did not overflow in the spring of the year 1906?

A. I don't know, it might in the spring, but not in the summer, they raised a crop.

Q. You are not able to state, do I understand, at this time, whether the Bois de Sioux did overflow in the spring of 1906 or not?

A. I don't think it did.

Q. Then in 1906 did these lands adjacent to the Bois de Sioux river in North Dakota raise crops and harvest them that year?

A. Yes, I suppose they did.

3205 Q. In 1907, did the Bois de Sioux river overflow its banks?

A. Yes, I think it did in the spring that year.

Q. How much did it overflow in the spring?

A. That I don't know exactly.

Q. Much or little?

A. I guess it was quite a lot that spring.

Q. Wasn't as much as you had in the spring of 1916?

A. No, sir, I don't think so.

Q. Did you see that crop raised, put in and harvested on lands adjacent to the Bois de Sioux in North Dakota in 1907?

A. Well, then I seen crops put in, in North Dakota and Minnesota both.

Q. On these lands I am talking about, adjacent to the Bois de Sioux river?

A. Yes, sir, there is lands along the Bois de Sioux that can be put in most every year.

Q. And you saw it that year, on those lands?

A. I seen crops put in along the Bois de Sioux river that year.

Q. You remember Mr. Pinkney's farm?

A. No, sir.

Q. In 1908, did the Bois de Sioux river overflow in the spring?

A. I don't know, I don't think it did.

Q. You- observation is that it did not?

A. Yes, sir.

Q. Did you see crops likewise raised, harvested and threshed on lands in North Dakota adjacent to the Bois de Sioux that year?

A. Yes, sir.

3206 Q. In 1909 did the Bois de Sioux overflow in the spring?

A. I guess it did not.

Q. Your observation is it did not?

A. I think it did some, not to hurt the crop.

Q. Not *the* hurt the conditions of putting in crops for that year?

A. No, sir.

Q. And crops were likewise raised, harvested and threshed on the lands in North Dakota adjacent to the Bois de Sioux river in that year?

A. Yes, sir.

Q. In 1910, did the Bois de Sioux river overflow in the spring?

A. I think it did some in the spring.

Q. Nothing to do any damage?

A. Well, I expect it did keep back the seeding of some of the low land.

Q. It receded and went back?

A. Some of the land was seeded when the water went down.

Q. Did you see crops raised, harvested and threshed on these lands adjacent to the Bois de Sioux river in the year 1910?
A. Yes, sir, some of the land was worked.
Q. Was 1910 a dry year?
A. Plenty of rain.
Q. What you call a wet year?
A. I wouldn't call it too wet a year.
Q. Was it more than usual?
3207 A. I don't know as it was.
Q. You haven't any definite recollection on that at this time?
A. No, sir.
Q. In the spring of 1911 did the Bois de Sioux river overflow?
A. I wouldn't wonder, but it did in the spring, it didn't in the summer.
Q. I am not asking you whether you wonder or not, I am asking you about your recollection and memory, whether it did in the spring of 1911, overflow?
A. Well, I think it did in the spring a little, it always does if there is any snow at all.
Q. Did it overflow enough to do any damage?
A. I don't know as it did.
Q. Did it destroy any crops in 1911?
A. Not that I know of, not the way I travelled [illegible] airmount.
Q. Was 1911 a wet or dry year?
A. It wasn't too wet where I lived.
Q. Was there much rainfall in 1911?
A. Not an awful lot.
Q. What does that mean, much or little?
A. That means enough, just enough for crops.
Q. That year you saw crops, raised, harvested and threshed on those lands in North Dakota adjacent to the Bois de Sioux river?
A. Yes, sir.
Q. In the year 1912 did the Bois de Sioux river overflow in the spring of 1912?
A. I guess it did not much.
3208 Q. Have you any recollection of that?
A. No, I haven't exactly.
Q. Was it a wet or dry year?
A. It was all right for crops where I lived.
Q. Was it all right for crops on these lands adjacent to the Bois de Sioux?
A. Got pretty wet, I don't think they could have raised crops on all, some of the land was not seeded along the Bois de Sioux. Up north where I lived, it was different.
Q. Did you see in the year 1912 any lands adjacent to the Bois de Sioux river where crops were destroyed by water or where crops could not be put in in 1912 in North Dakota?
A. I don't know as I did. North of where I live the land runs different, and I didn't travel on that, to know so much about it.
Q. So far as your observation goes and your recollection goes in

the year 1912 did they put in crops on those lands adjacent to the Bois de Sioux river and cultivate and harvest them, and thresh them?

A. I think it was, on the most of it.

Q. Are there any lands upon which you have any recollection that they didn't do that in 1912?

A. No, there ain't any lands, because I don't travel south of the town there. There might have been some there wasn't put in in 1912.

Q. The year 1913, did the Bois de Sioux overflow in the spring?

A. I can't remember 1913, whether it was in the spring, I don't think it did in the summer.

Q. And you can't remember the spring of 1913,——

3209 A. In the spring of 1913 I guess it was wet.

Q. That is four years ago, and 1880 is 37 years ago, isn't it?

A. Yes, sir, I guess it is, the way you figure it.

Q. Isn't that correct?

A. I don't know, I ain't stopped to figure it, I ain't got time, you are keeping me too busy.

Q. In 1913, you haven't any definite recollection as to whether the Bois de Sioux river overflowed or not?

A. Well, I think it did in the spring, I said I thought it was wet in the spring.

Q. I don't want to know what you thought, I want to know and have you state in the record what your recollection is, and your memory is.

A. Well, I think it did in the spring.

Q. When you testified as to conditions that existed in 1880 along the Bois de Sioux river and the Rabbit river did you only think that you saw them or did you see them?

A. I told you what I saw, I was living there, and of the conditions those years. South of Fairmount, I don't travel down there and I don't know anything about it.

Q. You were living on this farm in the spring of 1913, the same farm where you had lived before?

A. Yes, sir.

Q. And you had as good an opportunity to observe conditions in 1913 as you did in 1880, did you?

A. Yes, sir, I did.

Q. Have you any distinct recollection or memory as to whether the Bois de Sioux river overflowed in the spring of 1913, or not?

A. I think it did in the spring, I think it went over

3210 the banks in the spring a little.

Q. Do you know whether it did or not?

A. Yes, sir, I think it did.

Q. You testify it did?

A. I say it did.

Q. Was it a wet year or a dry year?

A. It wasn't very wet where I lived.

Q. You saw crops put in in 1913, on these lands in North Dakota and crops raised and harvested?

A. Yes, sir, I seen crops put in in North Dakota in 1913.

Q. In the spring of 1914, did the Bois de Sioux river overflow that spring?

A. Yes, sir, it did in the spring.

Q. Much?

A. No, it wasn't very high, it wasn't so very high, it didn't stay up there long that spring. It come up again in the summer. No, I don't think it did that spring, but in the fall it raised in 1914, I think in the spring of 1914 the river was not over the banks much then.

Q. In the year 1914 if I understand your testimony correctly the Bois de Sioux river did not come out of its banks in the spring of 1914?

A. No, sir.

Q. In the summer of 1914?

A. No, sir, no- that I know of, not where I lived, west of where I lived the Bois de Sioux river was never out of its banks in 1914, that I saw.

Q. You didn't see it out of its banks south of you in the spring or summer of 1914?

3211 A. I heard them say that south of Mr. Pinkney's land that the water was over Mr. Pinkney's land?

Q. I am just asking you about what you know, not what somebody else told you.

Q. I never saw the Bois de Sioux out of the banks in 1914; it was south of course, but it wasn't where I lived.

Q. Did you see likewise in the year 1914 these lands in North Dakota adjacent to the Bois de Sioux sown into crops?

A. Yes, sir.

Q. Crops raised and harvested and threshed?

A. I see- lands in 1914 that wasn't harvested.

Q. Where?

A. Mr. Brackin's.

Q. In Minnesota?

A. Yes, sir.

Q. In the fall of the year?

A. Yes, sir.

Q. By reason of flood conditions that occurred in that fall of 1914?

A. Yes, sir. His crops was standing in the water and he took me out and showed them to me.

Q. In the summer of 1914?

A. It was in the fall that I saw the crops.

Q. You saw the crops in the fall of 1914?

A. Yes, sir.

Q. On Theodore Brackin's farm?

A. Yes, sir.

Q. Standing in the water?

A. Yes, sir.

Q. What time?

3212 A. It must have been September or October I was there at his place.

Q. And where is Theodore Brackin's farm situated?

A. I can't tell the number of the section he is on.
Q. How far is it from your farm?
A. 6 miles.
Q. South or north?
A. South and west a little.
Q. Does his land border upon some of it, the Bois de Sioux river?
A. Yes, sir.
Q. Will you say whether or not this land is in section 34-130-47, about 5 miles south and about west of your place?
A. Yes, sir.
Q. How deep was the water on this land?
A. I don't know, the water wasn't very deep on the land.
Q. How much land was covered with water?
A. Well, he showed me a foot, I should judge, under the water.
Q. Was the Bois de Sioux overflowed at that time?
A. It was at that point, further north it wasn't but a little.
Q. Which way was the water running?
A. It wasn't running any way when I was there.
Q. Which way was the water in the Bois de Sioux running?
A. It was running north at that time, it was a very small stream, further north of where I lived it was not a big stream.
3213 Q. How about the winter of 1914, did you have much snow?
A. Yes, sir, we had quite a little snow, but not to amount to much.
Q. In the spring of 1915, did you see the Bois de Sioux river overflow?
A. Not where I live.
Q. Did the Rabbit river overflow in the spring of 1915?
A. It overflowed but it was only one rise, it rose in the spring, it went over the banks.
Q. Just a slight rise?
A. In the summer time it raised up again.
Q. In the spring I am asking about?
A. In the spring it rose.
Q. At the spring break-up?
A. Yes, sir.
Q. Did you put your crops in in 1915?
A. I did.
Q. Did you see lands in North Dakota adjacent to this Bois de Sioux river westward from you and southward from you in North Dakota put into crops?
A. I seen it west of me and south of me put into crops.
Q. Was the season of 1915 a wet year or a dry year?
A. It was quite wet.
Q. Pretty wet?
A. Yes, sir.
Q. Rained all summer?
A. No, sir.
Q. Rained much in the spring?
A. No, not so very much.

3214 Q. Just enough?
A. Well, a little too much sometimes.
Q. You had a little too much sometimes?
A. Yes, sir.
Q. Your land got pretty wet?
A. Yes, in 1915, in the fall we got rains but not in the summer time, not to hurt the land.
Q. You didn't have much rain in the summer?
A. Not where I lived in 1915. We harvested every bit of crop, I harvested every acre.
Q. You saw these other crops growing there along the Bois de Sioux river in North Dakota of Wheat and oats and other crops in good shape in July, 1915, before the flood came?
A. I didn't see it in July, I seen some of them——
Q. Do you trade at Fairmount village?
A. Yes, sir.
Q. How do you get to Fairmount?
A. I go a mile south, a mile and a half south and then I turn and go west to the meridian road and then straight into Fairmount, is the road I travel.
Q. And you cross the Bois de Sioux in driving to Fairmount?
A. Yes, sir.
Q. You came into Fairmount every week, as a rule?
A. Generally every week or every two weeks, every seven or eight days.
Q. In that spring of 1915, did you see the Bois de Sioux river flooded?
A. It wasn't very high west of me but south it was high. I seen where I crossed the bridge, I seen the water going across the land in fall.
3215 Q. When did it seem to be high in 1915?
A. In the fall.
Q. What time in the fall?
A. I don't know what time in the fall.
Q. What month would you say?
A. I don't know what time it was highest.
Q. How high did it get?
A. It wasn't very high where I crossed that bridge, it wasn't very high.
Q. Any land flooded?
A. South it was flooded.
Q. See any crops destroyed along the Bois de Sioux river in North Dakota in the year 1915?
A. Yes, sir, I did.
Q. Some standing in the water?
A. Yes, sir.
Q. And during the winter of 1915, was there much snow?
A. Yes, sir, there was quite a little snow.
Q. As much as there was in the winter of 1896?
A. I don't think there was; I think there was quite a lot of snow then, I don't remember much about it.

Q. Was there as much snow as during the winter of 1880?
A. No, sir, there wasn't.
Q. Was there any more snow than there was during the winter of 1892?
A. I don't know as there was any more.
Q. Will you say that the winter of 1892 and the winter of 1915, compared similarly?
A. Yes, sir.
3216 Q. In the spring on 1916, you say the Bois de Sioux flooded?
A. 1916?
Q. Yes, sir.
A. Yes, sir.
Q. What time?
A. All summer.
Q. When did you see it flooded first?
A. As soon as the snow went off in the spring.
Q. When was the water the highest?
A. I think it was highest in June and July.
Q. Was it higher in June and July, 1916, than it was in April 1916?
A. Yes, sir.
Q. You are sure about that?
A. Yes, sir, it was higher in June than in April, 1916.
Q. Did it continue high during the summer after July 1916?
A. Yes, sir, kept getting higher all the time, stayed high until when the fall commenced, it commenced to get lower in the fall.
Q. If it was high in July, and got higher afterwards, it must have been higher in August than it was in July?
A. It might have been higher, it was high enough so that——
Q. When did you think in 1916 this river was the highest?
A. 1916, the road that we travel on going to Fairmount,
3217 it was over that road three or four feet during that summer. I couldn't tell what time of the year it was highest.
Q. You had flood conditions apparently existing in 1916, all through the season?
A. We did.
Q. And it was very apparent that those lands adjacent to the Bois de Sioux river in North Dakota could not be cropped or crops raised thereon during this year?
A. No, sir, not that I know of.
Q. That is sure?
A. Sure, and the land away from the Bois de Sioux couldn't be worked.
Q. The answer is that not only lands adjacent to the Bois de Sioux, but other lands in North Dakota could not be worked that year?
A. Yes, sir, in Minnesota too.
Q. And is it also your testimony that other crops could not be raised on other lands not adjacent to the Bois de Sioux in North Dakota that year?

A. Yes, sir.

Q. And is it also your testimony that no crops were raised on lands in North Dakota?

A. There was crops raised in North Dakota?

Q. In other words, Mr. Joy, I don't think you intend to testify that there were no crops of wheat, there were no crops of oats, or barley, or other cereal crops raised in Fairmount township in that year 1916?

A. There was plenty of it, there was in spots there was crops and there was crops drowned in 1916.

Q. It appears that you live not far from the Rabbit river
3218 to the north here and you are quite familiar with this Rabbit river apparently from the testimony that you have given with the flood conditions that existed along it from year to year?

A. Yes.

Q. And you have been familiar with it for a great number of years?

A. Yes, sir, I have.

Q. Now, the Rabbit river has well defined banks, rather high banks has it?

A. Yes, sir, it has got high banks.

Q. And it had a rather rapid current?

A. Yes, sir.

Q. It flows into the Bois de Sioux river?

A. Yes, sir.

Q. When it flows into the Bois de Sioux river as you have stated in section 34, it takes a bend to the south?

A. No, where it runs into the Bois de Sioux river, it runs west.

Q. Rabbit river in section 34, when it comes into section 34, bends to the south?

A. Yes, sir.

Q. And flows south some distance before it turns westerly into the Bois de Sioux river?

A. It comes in—when it comes into section 34, it runs south, makes a turn and runs north, makes another turn runs south, and makes a big bend and then she starts and runs north and makes another bend and runs west into the Bois de Sioux.

Q. I call your attention to this map of the drainage area of Lake Traverse, showing drainage ditches, which had been marked
3219 as an exhibit in this case, and ask you to state whether or not the Rabbit river is approximately shown correctly on this map as to its direction of flow in section 34 where it empties into the Bois de Sioux river?

A. Well, it don't show just exactly the natural bends of the river on this here. There is section 35, here is where she turns in there, there is a little more turn in the river. There is the bend I mean, of the water when it comes from the east. Here is the turn——

Q. We can't get this into the record intelligently. What I want to know is whether the [illegible]bit river, when it passes into section 34, turns sharply to the [illegible]ad runs south for a ways.

A. No, it don't turn sharply to the south. It runs only a little

ways south when it turns and runs north, then it makes a sharp turn and finally runs west into the Bois de Sioux.

Q. About how far does the Rabbit river, after it passes into section 34 bear to the south?

A. After it runs into section 34, it don't run very far south.

Q. About 40 rods altogether?

A. It might be thirty or forty rods running south.

Q. You have stated in your direct examination that during certain years the Rabbit river in section 34, went out of its banks?

A. It did.

Q. When it did go out of its banks these times that you have mentioned, where did it go out of its banks?

A. That turn where I told you.

Q. Where it turns abruptly to the south?

3220 A. No, sir, it makes a big bend but going west.

Q. Will you indicate on the map about where it, the Rabbit river, left its banks?

A. This big turn, this big bend on the map is the place (indicating).

Q. Mark it please on the map, so I can describe it in the record.

A. I can't tell because the way the river is it ain't right. The bends ain't all in the river, I can't get at it.

Q. To get at it perhaps, in another way—what is the distance from the Rabbit River to the Bois de Sioux river where the stream in those years left the banks of the Rabbit river?

A. Well, if you follow the river it would be quite a ways, take it straight west it would be seventy or eighty rods west, take it straight that way. That ain't the way the water goes it don't go straight.

Q. And it went across, you say, from the southerly bearing of the Rabbit river over into the Bois de Sioux, where it makes that turn in there. In high water time it runs over that big bend in low places and run southwest and run across section 3 into the Bois de Sioux.

Q. The Bois de Sioux river from the high bridge,—and you know what I mean by the high bridge?

A. No, I don't know what you mean by the high bridge.

Q. This bridge that crosses the Bois de Sioux river, Mr. Joy, between section- 10 and 15, east of Gouge's farm, do you know where that bridge is?

A. Yes, sir.

Q. From the bridge north the Bois de Sioux river has pretty well defined banks and channels?

3221 A. Yes, sir.

Q. There are much higher banks here and the channel is much better defined than it is further south?

A. Yes, sir.

Q. And from the place where the Rabbit river empties into the Bois de Sioux river, the banks are well defined?

A. Yes, sir, higher banks.

Q. Aren't they even higher in some respects, than the land surrounding?

A. No, the Bois de Sioux ain't.

Q. I am speaking of the Bois de Sioux north of the Rabbit river.

Q. The Bois de Sioux north of the Rabbit river has high banks?

A. When you have considerable snow during certain seasons the river bed north of where the Rabbit river empties into the Bois de Sioux gets filled with snow?

A. All the rivers fill up with snow.

Q. I am asking you particularly with reference to the river bed north of the Rabbit river.

Q. That don't fill up any more north than south.

Q. I am asking you whether or not when you have considerable snows some winters the Bois de Sioux north of the Rabbit river gets filled with snow?

A. Yes, sir.

Q. When the spring break-up comes after such conditions, does it happen sometimes that the waters will come down the Rabbit river or will come up the Bois de Sioux at the time when the Bois de Sioux north of the Rabbit river is filled with snow and ice?

A. Well, I told you in the spring when the river was full
3222 of ice that is what dams it up.

Q. Have you observed that condition existing sometimes?

A. Yes, sir, I have seen the river dam up with ice and the water run south.

Q. That is in the early springs sometimes?

A. Yes, sir.

Q. The year 1881, was the highest flood period known in the history of this country, wasn't it?

A. I don't think so? I think it was just as high since then sometimes.

Q. You think it was just a- high since 1881 as it was in 1881?

A. Yes, sir.

Q. 1916?

A. No, I think there was one spring that the water was higher in the spring time than it was in 1916.

Q. 1881?

A. Well, I don't think that was the highest water, it was higher other years afterwards.

Q. You have observed apparently from questions that counsel has directed to you, that the Rabbit river has been carrying quite a large amount of water in recent years?

A. Yes, sir.

Q. In response to questions that counsel has asked you also apparently there have been numerous county ditches drained into the Rabbit river in Minnesota?

A. Yes, sir.

Q. And these county ditches carry water, do they not?

A. They do.

Q. And they carry water faster and more rapidly into the
3223 Rabbit river than if there had been no ditches?

A. Yes, sir.

Q. More of it, di they not?

A. Yes, sir.

Q. And you stated they bring the water down rapidly into the Rabbit river and in greater amount and with greater velocity?

A. Yes, sir.

Q. And when it gets down into the Bois de Sioux river you get a whole lot of it at once when you get the water that fills the ditches, is that correct?

A. That is right.

Q. And besides the county ditch there is also one judicial ditch, isn't there, in the Rabbit river up near the Tintah Slough?

A. I don't think there is, I don't know whether there is any there—there may have been one, they surveyed another one but it hasn't been laid.

Q. When were some of these ditches put in you have been talking about Mr. Joy?

A. Well, I don't know, there was one built this summer, east of Campbell. They dug one last year and one the year before and there was some dug before that too, and I don't know the years they were finished.

Q. You haven't much knowledge of what ditches have been dug further up the Rabbit river?

A. There is no ditches further up the Rabbit river only near Tintah. There was one dug a few years ago. I never seen that ditch.

Q. You say that you go to Wahpeton occasionally?

A. Yes, sir.

3224 Q. How frequently do you go to Wahpeton?

A. Sometimes twice a year, sometimes every month, sometimes every week.

Q. How far is Wahpeton from your farm?

A. 14 miles.

Q. North?

A. It is north and west.

Q. And when you go to Wahpeton, which way do you go?

A. I go straight north of my place, generally, sometimes, I——

Q. How many miles north?

A. I go two miles north, sometimes. Sometimes I go 1 mile north and turn and go west.

Q. Across into into North Dakota?

A. No; I have gone that way, but I don't generally go that way. I go straight north up along the river to Breckenridge.

Q. Across the Otter Tail?

A. No, sir.

Q. Across the Bois de Sioux?

A. If I go over into North Dakota, I cross the Bois de Sioux but the north follows up further north.

Q. If you go into Wahpeton, you must necessarily cross the Otter Tail, if you go up on the Minnesota s[illegible]

A. No, sir.

Q. Would you cross the Bois de Sioux when you go to Wahpeton?

A. I cross the Bois de Sioux.

Q. The Otter Tail and the Bois de Sioux flow into the Red river of the north at Wahpeton or Breckenridge?

3225 A. The Bois de Sioux river flows into the Otter Tail river and it is called the Red river at Breckenridge.

Q. You say in 1916 the Bois de Sioux was high all summer?

A. Yes, sir, it was.

Q. The Rabbit river was high part of the time and low part of the time?

A. It wasn't low.

Q. It would go up and then go down?

A. It always rises quick and goes down. Of course, in 1916 it was pretty high all summer.

Q. But it wasn't overflowing its banks all summer, was it?

A. No, sir.

Q. It went over its banks in the spring of 1916, the Rabbit river?

A. Yes sir.

Q. It went over its banks in June?

A. It was the first time I ever saw it go over its banks in June.

Q. You saw a condition existing in 1916 with regard to the Bois de Sioux river from where the Rabbit river flows into it south was flooded probably all season, did you not?

A. Yes, sir.

Q. And was extremely high all season?

A. It wasn't over the banks up there all summer, the Bois de Sioux, it was south here.

Q. Because the banks are high there?

A. Yes sir.

Q. But south of there you had an extreme flood condition
3226 existing practically through all the season?

A. Yes, sir, it was south of where I go to Fairmount, it was flooded all summer but north of it was not.

Q. So that necessarily, at the place where the Rabbit river empties into the Bois de Sioux, there was a large amount of water passing through there all the time?

A. There was lots of water going down the Bois de Sioux all summer until freeze-up time.

Q. You don't understand my question thoroughly. Under those flood conditions you have testified about there was a large amount of water flowing up past the Rabbit river where the Bois de Sioux flows into it north and right straight through the season?

A. There was.

Q. How many times were you in Wahpeton in the year 1916?

A. I would say four or five times. I couldn't tell how many times I was there last spring.

Q. Go up there in the summer?

A. Yes, sir.

Q. And in the spring?

A. Yes, sir, I went up in the spring.

Q. And in the fall?

A. Yes, sir.

Q. And you saw the river up there that year get up there?

A. Yes, sir, I saw it.

Q. Was it high in the spring?

A. Pretty high in the spring.

3227 Q. Was the country around there flooded?

A. In the spring of 1916?

Q. In the spring of 1916.

A. It wasn't so very much flooded, it was flooded some, of course, the low land was flooded.

Q. Was the river high in April?

A. It was.

Q. When you went up to Wahpeton in the summer had the river gone down?

A. Yes, sir.

Q. Had it gone down some 6 or 7 feet?

A. I don't know.

Q. Would you state your observation to be approximate that?

A. You mean the Bois de Sioux?

Q. No, the Red river at Wahpeton.

A. Well, that is a hard thing to say about the Red river.

Q. It had gone down though considerably?

A. It had, but not that much.

Q. In the several times towards fall when you were up at Wahpeton, had the river gone down meanwhile?

A. It had but it was pretty high, high all season.

Q. Would you say, Mr. Joy, that in the month of September the river at Wahpeton was high?

A. It was high for that time of the year.

Q. Would you say that in the month of September, 1916, the river at Wahpeton was anything over the normal?

3228 A. Yes, sir.

Q. How much would you say it was over the normal?

A. I don't know.

Q. Would you say that it had fallen some ten or twelve feet from the time it had raised in the spring?

A. I wouldn't say that.

Q. Anyway, it has gone down considerably?

A. It had gone down.

Q. How much you don't know?

A. No, sir, I don't know how much it fell but the Otter Tail river don't fall very much. It ain't a river that drops fast.

Q. In the summer of 1915 it was quite dry there around you?

A. 1915 it wa-n't dry but we could raise a crop, we wasn't bothered with the water in that spring.

Q. You say that condition existed around among your neighbors to some extent?

A. Where I lived we had all a good crop, no drowning out where I lived anywhere south of the Rabbit River.

Q. There were no big rains in 1915?

A. There wasn't no big rains in where we lived in 1915.

Q. How far do you live from Fairmount, how many miles?

A. I think about 6 miles.

Q. That is where you lived all the time as you stated in your testimony?

A. Yes, sir.
Q. Have you any interest in this case?
A. No, sir.
3229 Q. Have you talked with Mr. Taylor?
A. No, sir.
Q. To-day about this case?
A. What Taylor?
Q. The gentleman sitting back of you there?
A. Me and him was talking, yes, sir.
Q. Did you tell Mr. Taylor, did you say to him, that "If you (meaning North Dakota) would win this case I believe my taxes will be a good deal higher?"
A. He asked me——
Q. Answer the question.

Mr. Palmer: Answer it your own way.

A. He says to me: "It wouldn't make 15 cents' difference to you which way it goes." I think I says: "It will make twenty-five and a quarter." He says: "No, it wouldn't make 15 cents' difference." I says: "If North Dakota wants us to pay for the crops they lost, I will have to sue North Dakota for the crops I lost and roads that was damaged in our country," so we laughed about it.

Mr. Bronson:

Q. I will ask you if you told him or said to him this language or this in substance: "If you win this I believe my taxes would be a great deal higher?"
A. If who wins?
Q. "You," meaning North Dakota; did you say that?
A. I didn't say that he would win it because I told him he wasn't going to win it; that is what I told him.
Q. Is your answer that you didn't say that or words to that effect?
A. I tell you, I says, he says: "It won't make 15 cents' difference," and I says: "Yes, it will make twenty-five and a quarter dif-
3230 ference."
Q. I am asking you whether you told Mr. Taylor those words.
A. I did not. I didn't tell him that way, not that way. I didn't state it that way.
Q. You didn't say: "If you win this I believe my taxes would be a great deal higher?"
A. No, sir, I didn't say it in that way.
Q. Did you say it in words to that effect?
A. We was joking; I said: "Of course it would be twenty-five and a quarter dollars," and he says 15 cents. I said: "I don't think so, I don't think you will win it anyway."

Redirect examination.

By Mr. Palmer:

Q. In your cross-examiation, the first part of it, what year did you understand counsel for the complainant to refer to?
A. Well, he was asking me about the weather in 1914——
Q. I don't mean that, the first part where he asked you about 1893.
A. I thought that he meant in 1883. He was talking about 1893 and I thought that he meant 1883.
Q. And your answers had reference to 1883?
A. Yes, sir.
Q. What year was it that you saw the crops in the water on Mr. Brackin's farm?
A. It was in 1915.
Q. In the fall of 1915?
A. Yes, sir.
Q. And do you wish to correct your testimony in that respect?
A. Yes, sir.

3231 Q. Now, a great deal has been said here about cat-tails on this flooded land. What were the conditions as to the growth of cat-tails on land in this locality away from this river or overflow lands?
A. There was cat-tails on land away from the river, miles from the river where the low land was, where the water stood, last summer and there is cat-tails now.
Q. Were those places where cat-tails ordinarily grow?
A. No, sir.
Q. Is that growth quite extensive on the prairie here generally?
A. No, sir.
Q. But was it in 1916?
A. Yes, sir.
Q. And after 1916?
A. Yes, sir.

Recross-examination.

By Mr. Pinkney:

Q. You never saw cat-tails grow on dry land, did you, Mr. Joy?
A. I never had seen them grow on dry land until this year. There wasn't any water and there was cat-tails growing there.
Q. But the cat-tails came last year?
A. Yes, sir, and they came this year too.
Q. And the land was all soaked with water last year?
A. Yes, sir.
Q. Did you ever see cat-tails growing on anything but marshy wet land?
A. Where I saw them growing this year it wasn't marsh land. It

was pockets in the land where the water had stood and when
3232 the water dried up they was growing there in low places on the land.

Q. And you saw more cat-tails growing around this part of the country in the last year or two than you ever saw in your life before?

A. Yes, sir, just as much cat-tails on the high land as on the low land.

Q. Do you say there were just as many cat-tails on the high land as on the low land?

A. Not on the high land where the land is high, but where the water had stood on the land. I can show you 50 acres of cat-tails four miles east of the Bois de Sioux river.

Q. Do you know whether that land had water on it in 1916?

A. It had water; there wasn't any country except right around the high land that didn't have water on.

Q. This big patch of cat-tails, the land was all covered with water in 1916?

A. Some time, yes, sir.

Q. In regard to the correction you wanted to make in your testimony on cross-examination, your answers had application to the year 1883?

A. It was 1883 I was talking about.

Q. What year did you think you were talking about?

A. 1883.

Q. You thought you were talking about 1883?

A. Yes, sir.

3233 FERDINAND A. OESTREICH, being duly sworn on behalf of defendant, testified as follows.

Examined by Mr. Palmer:

Q. What is your age?

A. 51.

Q. What is your business?

A. Farming, most of the time.

Q. Where do you live?

A. I live in Minnesota now, Wilkin county, Minnesota.

Q. What township in Wilkin county?

A. Campbell.

Q. East Campbell or West Campbell?

A. West Campbell, fractional township.

Q. That would be Township 130, of Range 47?

A. Yes, sir.

Q. On what section do you live?

A. 27, right near the river there.

Q. Near the Bois de Sioux river?

A. Yes, sir.

Q. Does your land border on the Bois de Sioux river?

A. It does not.

Q. How near does it come to it, your west line?

A. I should judge about 50 rods, I never measured it, somewhere near there.

Q. How far do you live from the confluence of the Rabbit river and the Bois de Sioux?

A. About 4½ miles from my place.

Q. How long have you lived there?

A. I have lived there since — moved on the place in the spring of 1894.

3234 Q. Have you lived there ever since?

A. No.

Q. How much have you been away?

A. I lived there in 1894 and succeeding years; I moved away the fall of 1897.

Q. How long did you stay away?

A. I stayed away about three years and I came back, I stayed there two summers, then I moved away again.

Q. How long were you gone?

A. The last time I was gone—I have been back pretty near every year but two years but I didn't live there, I went back to look after my crops.

Q. Did you live there in 1916?

A. Yes, sir.

Q. And in 1915?

A. Yes, sir.

Q. Does the Bois de Sioux river ever rise and overflow your land?

A. Yes, sir.

Q. What is the first time that you remember of doing that?

A. In the year of 1908.

Q. What time of the year?

A. It was in the latter part of July just before harvest.

Q. To what extent did it flood your land?

A. About forty acres of my grain. You mean the whole land; there is a draw in there, a coulee, and when we have heavy rains sometimes there is water in part of it all seasons and then again it is dry. This last year there ain't a drop in it.

Q. What is, this year, 1917?

A. Yes, sir, there wasn't anything in it, that is, it was the early spring, but say from June on there hasn't been anything in

3235 it. What I meant, 20 acres of the crop was what was drowned of my grain but it run in the coulee water at different times.

Q. Did you lose the crop on the 20 acres?

A. I did, half of it belonged to me then.

Q. How long did the water stay on the land?

A. That I can't say but I plowed it all that fall.

Q. Was that a season of heavy rainfall in the summer?

A. Quite heavy in June, Spring was very dry but it came in June.

Q. Do you recall any other year that the Bois de Sioux river overflowed upon your land?

A. In 1915.

Q. What time in 1915?

A. It started about the 10th of July, somewhere in July.

Q. To what extent was your land flooded?
A. About half of it.
Q. About half of the quarter section?
A. No, about half of the 280 acres would be about 140 acres.
Q. Was it to such an extent as to destroy the crops?
A. Yes, sir.
Q. Was the summer of 1915 one of excessive rainfall?
A. Not in this locality; we had plenty of rain for crops but land that wasn't flooded was in fine shape.
Q. Not your immediate locality then?
A. It wasn't too wet, you mean?
Q. Yes.
A. No.

3236 Q. How was it during the fall of 1915 as to wet conditions?
A. The fore part was very dry, the latter part it rained. I couldn't plow any of it that was flooded.
Q. Ordinarily, which direction does the Bois de Sioux river flow past your place?
A. North.
Q. Did you observe the direction of its flow in this summer of 1915 when your land was flooded?
A. Yes.
Q. Which way was it?
A. North.
Q. It was north then?
A. Yes, sir.
Q. Now, the season of 1916, how was it as to rainfall?
A. It was very wet all summer.
Q. Excessive rains?
A. Yes, sir.
Q. When did the real wet conditions begin?
A. Early in the spring, about the middle of March, last part of March; from the middle towards the last.
Q. How was it through the summer?
A. Wet.
Q. Rains?
A. Rains.
Q. Any good weather in between?
A. We had a few weeks in there, I should judge in April some time when we seeded, it was real good, but it wasn't hardly enough to finish seeding, what was out of water.

Q. And then what was the condition of the rest of the 3237 season?
A. Very wet.
Q. As to rains?
A. As to rains, yes, sir.
Q. Did you ever see, since you have been here, have you ever seen as much rain through the season as there was that year?
A. 1916?
Q. Yes.
A. No, sir.

Q. Was your land flooded again that season?
A. Yes, sir.
Q. To what extent?
A. About the same, about half of it, about 140 acres.
Q. Was that from overflow from the Bois de Sioux river?
A. Yes, sir, it was from the overflow.
Q. Did you observe the times of flood during that season which direction the Bois de Sioux ran?
A. North.
Q. All the time?
A. In the spring of the year it didn't. It come up for a little while from the north, flowing south, when the snow went away. That was in March, but during the summer it flowed north.
Q. That is, in times of very high water the course of the river seemed to turn and go south?
A. In the spring of the year when the snow started to go away.
Q. Had you observed that before, since you have been there, that the river flowed south?
A. In the spring of 1897.
Q. What time in the spring?
A. Latter part of March.
3238 Q. You say that spring the river turned and flowed south?
A. 1897, yes, sir.
Q. How long did you observe the course of the water south?
A. I couldn't say exactly, several days, this whole country was a flood then from Wahpeton down.
Q. How many days did you observe it flowing south in 1916?
A. Just a day or two, when the snow was disappearing.
Q. I think then you misunderstood my question. Through the summer, during the flood did it flow south or north?
A. North.
Q. When you saw the river running south, do you know anything about what the conditions were up at the Rabbit river?
A. No, I couldn't say, I wasn't up there.
Q. Do you know what the condition- were south from your place, down, we will say, down to this place they call Mud Lake?
A. In what year?
Q. 1916.
A. About the same as it was at my place.
Q. The land overflowed?
A. Yes, sir.
Q. And in 1897, the same way?
A. The same way.
Q. How did the flood conditions of 1897 compare with those of 1916?
A. They was lots worse.
Q. There was more water?
A. There was more water, we had more snow that year.
Q. How long did the flooded conditions continue in 1897?
3239 A. I should judge about a week.
Q. Then did the water go down?

A. It went down rapidly to the north as soon as the Red river opened up.

Q. Did it go down so that you could crop your land that year?

A. Yes, sir, I put in every acre I had under cultivation.

Q. You recall 1897 and 1908?

A. Yes, sir.

Q. As times of flood?

A. Yes, sir.

Q. And 1915 and 1916?

A. Yes, sir.

Q. Do you recall any other year?

A. I don't.

Q. In 1916 what was the condition of the roads and bridges in your township?

A. In places it was real bad, it was pretty hard to get around.

Q. Were the grades washed out?

A. Yes, sir, in places.

Q. And the bridges and culverts?

A. I didn't see no bridges washed out nor culverts.

Q. What was the condition as to the flow of the water in this coulee down across your land from the east?

A. From the east in what year?

Q. 1916.

A. 1916 it ran from the east, I should judge, up to pretty near August.

3240 Q. How deep a coulee is that and how wide?

A. Well now, I should judge on my place it is about 4 feet at the deepest, 4 or 5 feet.

Q. And how wide?

A. That is, during the summer or the spring floods?

Q. I mean, how deep is the coulee itself?

A. Oh, that,—oh, I should say to the banks about 5 feet on one side, to the south, and to the north it slopes, it is kind of level.

Q. How wide is it?

A. I should think it would be about 4 or 5 rods.

Q. Did it run full banks during the season of 1916?

A. It did.

Q. All summer?

A. Yes, sir, all summer, it went down towards the fall, in the fall.

Q. And that water, you say came from the east?

A. No, backed up from the river, it made the coulee high. When it runs particularly from the east it runs down in a hurry. This back-up was up on my brother's land across this ridge.

Q. Was there considerable water came from the east down this coulee?

A. The road ditch, yes.

Q. It was for 1916 I asked you about the roads and bridges, did you understand that?

A. Yes, sir, I did.

Q. What were the conditions as to excessive moisture on the lands away from this river in 1916?

A. It was bad in most part- of the country there.

3241 Q. To what extent did it affect the farming operations?

A. What they didn't get plowed, this is 1916 you are speaking of?

Q. Yes, sir.

A. What they didn't plow the fall before, it was pretty near impossible to plow in the spring, it was too wet.

Q. Was there some plowing that wasn't done in the fall of 1915 on account of wet conditions?

A. It seems to me there was some in the latter part, yes, sir.

Q. About what part of the lands in your locality away from the river was put into crop and crops raised on it in 1916?

A. Well, right handy there, there was the most of it put in, in the next section, but I don't recall any of the rest of them. My brother has a half in there and that whole section, the most of that was put in but they didn't get any crop off of it to speak of.

Q. Why didn't they get a crop off of it?

A. It was too wet, too much rain.

Q. Were these conditions generally prevailing around you there?

A. That year?

Q. Yes, sir.

A. Yes, sir.

Q. And to what extent was the crop a failure?

A. It was pretty near a total failure. They had some crop; I got about 2 bushels to the acre that year.

Q. Why was it pretty near a total failure?

A. On account of the heavy rains and the rust. We had rust that year.

3242 Q. This rain caused the rust?

A. I don't know, I couldn't say. We have had rust before, whether those rains did it or what it is I can't say.

Q. Now, a good deal has been said about cat-tails along the flooded lands along this river. What was the condition as to the growth of cat-tails on lands away from the river in 1916?

Mr. Pinkney: We object to that as incompetent and immaterial.

A. In places there was cat-tails.

Mr. Palmer:

Q. Was there cat-tails in places where they don't usually grow?

A. I think there was.

Q. After 1916?

A. Yes, sir.

Cross-examination.

By Mr. Pinkney:

Q. How long did I understand you to say, Mr. Oestreich, you have lived on 27?

A. I lived on there since the spring of 1894.

Q. And where did you live prior to that time?

A. I come to this country in 1884 and I worked around on farms and during that time I was back to Wisconsin a couple of years.

Q. You went onto this piece of land in Section 27 in 1894, do I understand?

A. Yes, sir.

Q. Did you buy it?

3243 A. Yes, sir.

Q. And have owned it ever since?

A. Owned it ever since and before a couple of years.

Q. And have cultivated it ever since, have you, either through yourself or through tenants?

A. No, I haven't. I guess I had a tenant about half the time or more.

Q. I say, you have either cultivated it yourself or through tenants ever since 1894?

A. I did.

Q. During all those years up to 1915, did the flood waters on your land ever prevent you or hinder you from raising and harvesting a crop on there?

A. It did in 1908.

Q. When did flood waters come on the lands in 1908?

A. Some time in June.

Q. Do you know what time?

A. No, I couldn't say. I think it would be the latter part—yes, I am sure it was the latter part of June and first part of July.

Q. Do you know what caused the flood waters the latter part of June that you say came on your place?

A. From the river.

Q. Was that due to the fact that the river had become stopped up as you learned, by some obstructions in the channel?

A. We did think it was at the north bridge.

Q. Did you learn that this flooding on your lands in 1908 was occasioned by reason of the channel of the river being

3244 stopped up by obstructions in it?

A. I couldn't swear to that but we throught it was; there was a lot of moss in it.

Q. Isn't this a fact, Mr. Oestreich, that you did learn that the river was stopped up by an old bridge that was in there that had accumulated a lot of moss and weeds so as to obstruct the channel?

A. Yes, sir.

Q. That was the occasion of the flood of 1908?

A. I think it was. It was stopped up, I helped dig it out.

Q. When you took it out and freed the channel of the river the water immediately passed off?

A. It looked like it, yes, sir; there was a free passage then.

Q. And the waters then went off your lands, whatever was on them?

A. Yes, sir, I plowed it all; in the fall it was dry enough I could plow.

Q. With the exception of 1908, from the time you have owned those lands, you have cropped them and harvested your crop every year up to 1915, haven't you?

A. Yes, sir.

Q. And you have produced fairly good crops on them, have you not?

A. Always have.

Q. Wheat, oats, barley, flax, corn crops of that character?

A. Yes, sir.

Q. What time do you say in 1915 the flood waters came on your land?

3245 A. About July 10th somewhere there, the fore part of July.

Q. And about what time did they come on your lands in 1916?

A. They came on in the spring and they stayed on there the biggest——

Q. The entire spring, summer and fall?

A. Until fall, along in September it kept going down.

Q. Commenced going down in September?

A. Yes, sir.

Q. During all the time you have known this country, have you ever known the flood waters to equal those you saw here in 1915 and 1916?

A. I never did excepting the spring of 1897; that was the worst I ever saw.

Q. I understood you told Mr. Palmer that in the season of 1897 you put your crops in?

A. 1897 I did. I am speaking of the spring, most water I ever saw.

Q. You are speaking of the spring break-up?

A. Yes, sir.

Q. But as I understand, notwithstanding the heavy flood waters from the spring break-up in 1897, you afterwards put in your crops and harvested them?

A. Yes, sir, I did.

Redirect examination.

By Mr. Palmer:

Q. How was the balance of the season of 1897 as to rainfall
3246 after the spring, how was the summer?

A. Summer was fairly dry excepting in the fall; late in the fall we had rains.

Recross-examination.

By Mr. Pinkney:

Q. You don't mean that you have a distinct recollection of the rainfall of the summer of 1897 and in the fall of 1897? Have you a distinct recollection as to rainfall in the summer and fall of 1897? You kept no record of it?

A. I kept no record of it.

Q. And you have no distinct recollection of it?

A. I have this way, I tried to have my flax threshed and it rained so much I had to pull out to California before I could get it threshed.

Mr. Palmer: You had your crops all harvested?

A. Yes, sir.

Mr. Pinkney:

Q. And you did thresh them?

A. I threshed them.

Q. And saved them?

A. Yes, sir.

Q. As I say, you don't know any more about the rainfall of 1897——

A. I don't know how much fell. I know it was wet.

Q. You know you had some rains?

A. Yes, sir.

Q. And you have some rains every fall?

A. Yes, sir, most every fall.

Q. And you have some rain every spring?

3247 A. Yes, sir.

Q. And you didn't keep any record of the rainfall?

A. No, sir.

WILDER E. BRUCE, being duly sworn in behalf of defendant, testified as follows:

Examined by Mr. Palmer:

Q. What is you- age?

A. 63, the 24 day of this month.

Q. Where do you live?

A. I live in the township of Taylor, 129, Range 47, Section 26.

Q. What county?

A. In Traverse county, Minnesota.

Q. Is the town in which you live commonly known as the township of West Taylor?

A. Yes, sir.

Q. It is the fractional part of Taylor township next to the Bois de Sioux river?

A. Yes, sir.

Q. What part of section 26 do you live on?

A. I live on the northwest quarter, about 40 rods east of the corner.

Q. How long have you lived there?

A. I have lived there since 1881, excepting about two
3248 years or three years I lived on the northeast quarter of section 22, proved up on it as a preemption, same township and range.

Q. Do you own both of those pieces of land?

A. Yes, sir.

Q. How far is the Bois de Sioux river from your house?

A. From my house it is half a mile and about 120 rods.

Q. It is half a mile and 120 rods.

A. Yes, sir.

Q. In what direction?

A. I live west of the Bois de Sioux.

Q. How far is the Bois de Sioux River from this northeast quarter of 22 of yours?

A. That is in the vicinity of 100 rods. 100 to 120 rods.

Q. Your land lying east of the Bois de Sioux about 100 rods?

A. Yes, sir.

Q. What time in 1881 did you come to this locality.

A. I came to that locality there in June, 9th day of June, 1881, but I lived from the 18th of March with an uncle up on the Bois de Sioux on section 14 in township 130, range 47.

Q. And how far is that place of your uncle's from the Bois de Sioux?

A. The land runs down to within about from 20 to 40 rods of the Bois de Sioux river.

Q. That would be township 130, Range 47?

A. Yes, sir.

Q. Being the town of West Campbell?

A. Yes, sir.

3249 Q. Have you lived continuously then in this locality since March, 1881?

A. Yes, sir.

Q. And from where did you come here?

A. I came from Caledonia County, Vermont.

Q. Did you observe the condition of the Bois de Sioux river and the lands along the Bois de Sioux river in the spring of 1881?

Mr. Pinkney: Objected to as incompetent and immaterial.

A. Yes, sir.

Mr. Palmer: Did you go up and down the Bois de Sioux river that spring and summer?

A. Yes, sir. I and my brother were over here to the Great Bend, we rented some land in section — I rented it myself in the southwest quarter of twelve. I rented some land there and then I and my brother, I had no team and I went over here in North Dakota near the, what is called, the Great Bend.

Q What is that?

A. In North Dakota, it is kind of southwest of Wahpeton, a German settlement, and I bought four oxen there or we did, and we drove them to Wahpeton and then down on the west side of the river.

Q. Of the Bois de Sioux river?

A. Of the Bois de Sioux river, to two miles north of here and we got there at dark.

Q. Two miles of the site of the present town of Fairmount?

A. Yes, sir.

Q. What would be about up at Section 10?

A. Yes, sir.

Q. Township 130, 47?

3250 A. Yes, sir, but we left them directly on this line that leads out of Fairmount and Wahpeton. I have forgotten the fellow's names, they were bachelors, I think, Sekorski.

Q. That would be on section 3 that Mr. Sekorski lived, township 130—47?

A. No, I think he had land then further west.

Q. He has some land in 4, the east half of 4.

A. It is in there, and we heard that the snow was going off, the country before that was covered with snow, and we went back to Wahpeton and came down on the Great Northern to Campbell and across home where I was staying. Then the next morning he was going up—There was a pontoon bridge we had heard of up here on the north side of section 10 and we went there to cross over, that was opposite where the cattle was, and when we got there the water was pouring from the north, four or five feet deep in the road in waves.

Q. Which way was the water going?

A. Going south.

Q. The water was running south down what?

A. Down the Bois de Sioux river and then we——

Q. What was the nature of the current to the south?

A. Well, it was swift, it was in waves. The waves must have stood four feet, the water coming four or five feet deep.

Q. Four of five feet deep and flowing over the land to the south?

A. Yes, sir, to the south.

Q. What was the width of the river at that time?

A. At that place then it wasn't at that time, it wasn't very wide; it was the first of the waters coming in.

Q. About how wide?

3251 A. I should say might be 15 or 20 rods wide, 10 to 20 rods, and so we go back to the uncle and we stay there and the next morning when we got up and went out the whole country was a lake as far as you could see, and it come up on the east side of the river, it came up about 80 rods on 14, on the south side of 14.

Q. That is where you- uncle lived?

A. Yes, sir, and it stayed there, so I then, in a day or two, I went north again above the road that ran into Campbell that runs by section 10, and I heard a man had a boat up there. I went up there and got a boat to go across to my cattle.

Q. Over to Sekorski?

A. Yes, sir, I started for Seroski. These buildings where I got my boat was half a mile north of this road.

Q. The road that runs across the river?

A. Across section 10, and before I could get across the current carried me a mile and a half south. I couldn't row the boat, it was a flat bottom boat, against the current, so it carried me a mile and a half south of where the cattle was, so I had to return.

Q. Did you observe any buildings?

A. Yes, sir, there was buildings on the north side of section 10, and there was a house and a stable, hay stable, frame stable with a hay roof, and that stable was completely covered with water excepting a place on top where the hay was stacked up high, about as high as a hack cock, and there was a pig on top. That is why I remember that. The house, I should say, was about 10 foot posts and the water was clear up to the eaves of the house. How I remember this, from the time I lived in Minnesota every night before I went to bed I made a memorandum of all these things. I done that
3252 for 14 or 15 years, every night I done it, excepting a few nights that I was sick.

Q. You remember the pig on the roof?

A. Yes, sir, I remember the pig on the roof.

Q. That was in this section 10, the land that has been testified here about where Peter G. Smith lives and the L. T. Rising land?

A. No, I was wrong, section 10——

Q. What section was it?

A. It was section——

Q. South of there or north of there?

A. North of there.

Q. Section 3?

A. It must have been section 3.

Q. That would be north of the Smith land?

A. It was right on the road that leads from Campbell west.

Q. That would be——

A. (Referring to map.) Section 10, I guess it is; but it wasn't at that time, the parties that homesteaded was Nelson, that was his buildings, Nelson.

Q. Did you see these lands down to the south from the place where you settled?

A. Yes, sir.

Q. Down toward——

A. Down on the marsh.

Q. Down towards Blackmer?

A. Yes, sir, I saw the land down there. I used to go back and forth to those cattle for a number of days and in the meantime I would go over the country looking for land.

Q. How wide did the river get that spring, the Bois de Sioux?

3253 A. The river that spring ran from about 80 rods in section 14 to within 40 or 50 rods of this road that ran east of the town.

Q. That would be section 22?

A. John Anderson owned the land and it came up—he walked down with me a number of times to the river, I used to come across there in a wagon, I drove my oxen down to John Anderson's, that is where they was most of the time, and he used to walk down with me to the lake——

Q. What lake?

A. The lake, water.——

Q. The river?

A. The river, it was like a lake.

Q. It formed a lake?

A. It formed a lake, and he used to walk down with me quite often, down to the lake looking over his land and it was somewhere within forty or fifty rods of that road the water came.

Q. About how wide did it get all together, you say up there——

A. Up there it is two miles; 80 rods on 14, that brought it down to the section line and from that section line to this line is two miles, and then it was 80 rods on the other side, that was covered with water over the fraction and this side there was about 40 or 50 rods that was not covered.

Q. About two miles and a half?

A. Yes, sir, nearly that.

Q. How about it further south?

A. The wider it was the further south you got.

Q. Until you got down to where Blackmer Station is now?

3254 A. Water from Blackmer station it come up within about 20 rods of the northeast quarter of 22.

Mr. Pinkney:

Q. What year was that?

A. In 1881.

Mr. Palmer:

Q. That was over on the east side?

A. On the east side, and there was water clear through,——

Q. West?

A. West, nearly—there is a big slough.——

Q. On section 20?

A. Section 20? 20, and it reached clear through to the east side of that slough up. I couldn't say how far, but it wasn't a great ways down from the corner.

Q. About how wide all together, across there?

A. It was three miles.

Q. How was it further down south, down by the state line?

A. That went from bluff to bluff you couldn't see an acre of land down there clean across until you got to the bluffs on the west side, not an acre. Where White Rock stands today, all under water, you couldn't see there was any land there.

Q. Clear over to the bluffs would be about how far from where the thread of the river should be?

A. On the Minnesota side it didn't flood down there by White Rock, it didn't flood over a great ways, but from there——

Q. West?

A. West it must have been, oh, two miles and a half wide.

Q. More than two miles and a half wide?

A. Yes, sir.

3255 Q. Do I understand that the water was sufficiently deep so that you couldn't see and land at all down there?

A. No, you couldn't see any land at all, you couldn't see the—we called them canebrakes then but later we found it was a wild rice, big stalks from four to eight feet high.

Q. You could see some of those?

A. We could see some of those in places.

Q. How long did that water stay up through the season of 1881?

A. This water down here in the river went down so that my uncle and I put up some hay on the east side of the flooded land down nearly to the fraction.

Q. That is, in section 14?

A. Yes, sir.

Q. Way up in West Campbell?

A. Yes, sir; but I want this understood, a river is a stream of water that has banks and the water that flows between these banks is the river.

Q. That is what you speak of——

A. That is what I speak of as the river, and a marsh is a piece of land that is occasionally or partly covered with water.

Q. That is the way——

A. That is the way the dictionary defines them and that is the way I understand it.

Q. That is the way you are speaking of it?

A. That is the way I am speaking of it.

Q. Where did the river in those early days, where did the Bois de Sioux river begin.

A. The Bois de Sioux river in those early days commenced 3256 down in section 27, township 130—range 47; began down here in 27, in township 130, range 47.

Q. There by Hurdelbrink's land?

A. Yes, sir. I guess Hurdelbrink owns it now.

Q. And some of Charles Pinkney's land?

A. Yes, sir, in there; that is where the banks begin.

Q. That is at the north end of what has been called here Mud Lake?

A. Mud Lake, yes, sir, near there.

Q. Near the upper end of that?

A. The lower end.

Q. The northerly end?

A. The north end.

Q. Do I understand you to say that in those early days the river had no definite banks southerly of the northerly end of this Mud Lake in section 33, 130, 47?

A. Only occasionally a place where it would come in and be a little bank.

Q. What was the territory down south from there known as?

A. Marsh, Traverse Lake Marsh.

Q. Was it ever called or known as Red River Valley?

A. Never heard of it until yesterday calling it that. I never heard the name until yesterday here in Court, as the Red River of the north.

Q. Did you ever hear it called the Red River Valley?

A. No, I never heard it called the Red river valley.

Q. It was called Traverse Lake Marsh, you say?

A. Yes, sir.

3257 Q. And is that the way it has always been known as so far as you know?

A. Yes, sir, that is all I have ever known it *h*as called but this end here and through 130 that is river.

Q. That is the river?

A. Yes, sir.

Q. Beginning at the north end of Mud Lake and going north?

A. Yes, sir, that is the river and that is Webster's definition of a river.

Q. Southwardly from there is marsh and slough?

A. Yes, sir.

Q. How long did this flood condition continue south from this north end of Mud Lake?

A. South from there the marsh never was dry until 1889.

Q. And did that extend well over all of the country that you have described as flooded there to the south in 1881?

A. No, not over the whole but it covered over a good deal of section 27, that is, the west half, west part of 27, and a good deal of 34, and up in section 15 up until along about 1888, it was over what there was in 1915 and some in 1916.

Q. And how about section 33? Erickson's?

A. There was a big lake in there, wasn't dry, I don't think, until about 1894, and run down in South Dakota and in 1895 again was dry and there was a big lake on the line between North and South Dakota, always has been full of water up to 1894 and 1895, and in 1895 there was pieces plowed with a stubble plow in the lake.

Q. Where was this lake that you speak of on the State line?

A. It was over in there on the Adleson place, that is in sec-

3258 tion 34, I think.

Q. In section 34?

A. Yes, sir.

Q. You say that was plowed up once with a stubble plow?

A. No, sir, not that lake, the lake that was plowed up was down here in section 9, I think it is 8.

Q. Section 8 and 9 in——

A. Roberts County.

Q. What year was that—did that extend up in to North Dakota?

A. That Lake?

Q. Yes.

A. Well, yes, it went across in North Dakota a piece and then it got shallower, it wasn't so deep.

Q. What year was it plowed up.

A. 1895.

Q. And a crop raised on it?

A. Yes, sir, a crop raised on it, barley.

Q. Was it ever plowed at any other time?

A. Never plowed at any other time from that time until this, or from that time before.

Q. How was section 33, and 32, 29, 20, 21, 28, 27, in 1881 township 129, range 47?

A. In this slough that runs up through 32 that never was dry until along about towards the '90s.

Q. In 1882, do you call to mind that spring?

A. Yes, sir.

Q. What was the condition of things in this Bois de Sioux river south of this so called Mud lake?

A. In the winter of 1882——

Mr. Pinkney: We object to that as incompetent and
3259 immaterial.

A. —In 1881, and 1882, there was not a great snow fall in the fore part of the winter but along in February we had some snow and then along in March we had a day or two of thaw that took the snow off and ran into the ravines and that night froze up and held the water there. That water, that snow and ice, I drove over the ice with my team, used to drive over it with a wagon filled up the sloughs, and I think it was the 17th day of March we had a big snow, heavy snow, wet, and that laid on a few days and it went off the last part of March or first of April, in April, I think, and it filled the river up and the slough up, not so high as in 1881, but up as it has been several times since.

Mr. Palmer: What was the condition of things down on this flat?

A. It was all under water.

Q. It was all under water again?

A. Yes, sir.

Q. When I speak of the flat I mean south of Mud Lake?

A. Yes, sir.

Q. You say that was all filled up again?

A. Yes, sir.

Q. Could you see any land that spring?

A. No, there was no land that you could see from the west side until you got across to the bluff.

Q. In 1884 and 1885, along in there?

A. In the years 1884 and 1885, there wasn't so much snow and the river didn't rise up and the marshes didn't rise up so high. I don't think the marshes rose up any in 1884, and 1885 but the river rose up in 1884.

3260 Q. Did this marsh continue covered with water?

A. Yes, sir, not all, over, you know, it went down.

Q. In places?

A. Yes, sir.

Q. And how was it in 1888?

A. In 1888, I think in 1887, I think it was in 1888, that the blizzard the big blizzard in Dakota occurred that so many folks froze to death, there was a big snow that winter.

Q. What were the conditions in the spring?

A. In the spring it was all water, marshes all water.

Q. Did that continue during the season?

A. It didn't all get off, didn't get down low, lots of it covered.

Q. And in 1888 how was it?

A. There was lots of water there in 1888.

Q. What was the condition further to the north, north from this Mud Lake, section 33, 130, 47?

A. North of Mud lake, the Rabbit river, you know, has higher banks, and swift flowing stream, and the water comes up thick and it runs and flows back to the north.

Q. To the north?

A. To the south, but there wasn't enough snow in the country after 1888 to fill up the marsh, I don't think it affected the marsh.

Q. Between 1881 and 1888, what was the condition of things between this mud lake in section 33, 130, 47 up to the Rabbit river; what was the condition of the river there in those springs?

A. There was water in the river all the time.

Q. How about its overflowing its banks?

3261 A. It was over its banks in 1881, 1882, and 1883, that it was above the banks, to flow out of the banks.

Q. Rose over the adjacent land?

A. Yes, sir, some; to a certain extent.

Q. What effect did the Rabbit river seem to have on the Bois de Sioux river?

A. In the spring when the snow went off it would back up into the north end of the Sioux river and raise the water and that water, as soon as it got to flowing north, as soon as the channel north got thawed out, opened it, it would let the water out quick.

Q. And did the Rabbit river appear to have the effect when it was full, of setting the water back in the Bois de Sioux river?

A. Yes, sir.

Q. Were there any other springs that you saw the Bois de Sioux river flowing south?

A. Yes, it flowed south I was living there in 1887—in the spring of 1887, the water flowed back, the currect as far south, further than Blackmer bridge, 1887 or 1888 where the bridge is now.

Q. Way down to 21?

A. Yes, sir.

Q. In the township 129, range 47?

A. Yes, sir, and it done that again in 1897.

Q. How long did it flow south?

A. I never noticed only a day or so. I didn't notice—I was down there when the water was coming up and I see it was flowing south.

Q. From 1889 up to 1897, what were the conditions on this flat south of this Mud lake?

3262 A. It was dry. It was getting dry in 1895,—in 1894 it was dry, and in 1895, you could go across it anywhere, even down in the lake. There is a lake down on—the section south of 27, there is a lake there that is dry. You could go across it and they did go across it with a threshing machine.

Q. You recall those years from 1889 to 1897 as dry years?

A. Yes, sir, as dry years, very little snow them years, and not much rainfall.

Q. Were these lands on these flats, by which I mean the land that was overflowed in 1916, you know what land that was?

A. Yes, sir.

Q. The lands that were overflowed in 1915 and 1916, I will speak of those as 'the flats' were those flats cropped in those years, from 1889 to 1897?

A. Yes, they were cropped them years.

Q. Now, how was it in the year 1897, were they cropped?

A. In the year 1897 there was a good deal that wasn't cropped.

Q. On acount of what?

A. On account of the water.

Q. From then on——

A. You take it——

Q. From 1897 on.

A. From 1897 on it was cropped. Take it there in section 22, there was some years it wasn't cropped and some years it was part of it cropped, and on 22, in the north lot in section 22 never was plowed from 1902 to the present time only once.

Q. What piece of land is that?

A. In section 22.

3263 Q. Which lot?

A. The north Lot.

Q. Lot 4, that is the Quidding land?

A. Quidding land, yes, and before 1915 he had a good share of the south of that into crop and on section 21——

Q. That is the Anderson Juleen land?

A. Yes, the Anderson Juleen land; in 1902 and 1903 and along there, there was pieces that wasn't cropped and then there would be strips between on the Anderson farm that would be cropped, between the sloughs running north and south, and on the northwest quarter of 21, there was about 40 acres, I should judge on the east side, I don't think there was more than one or two years during that time it was cropped, but there was a strip from there on to the west I think there was a crop on nearly every year, but there was a corner in the northwest corner of that quarter I don't think was ever cropped. And then, in the northwest quarter of 21——

Q. That is where Blackmer station is?

A. That is where Blackmer station is, I never can remember of only being two or three crops and they was poor crops on that quarter in the meantime, between 1902 and 1917.

Q. Down in 28, south of there, the Butts land?

A. Down in 28, the crops, you know, upon that land, I have cut these crops on that land when it has been dry, and if it had been

on my own land I wouldn't have cut the crops. It was poor crops, poor land, all that land is good for is to hold the world together. That is all it is good for, to hold the world together, that is, as far as farming is concerned. It ain't any good for farming, never was.

Q. And is there anything besides the weather conditions that makes it poor?

A. Yes, sir, it is so filled with stone and alkali. Here is
3264 something I would like to say on marshes and in this county there are three distinct levels of grades with three distinct kinds of grass growing on. Where the water stands most of the time in the marsh is a high grass growing in the early days, oh, from that high (indicating) to five feet.

Q. Mention the height—3 to 5 feet high?

A. 3 to 5 feet high and that grass, you mow it or feed it off and it comes in a different kind of grass and then on a higher level there is a grass grows we used to call it blue stem, the bottom of the grass would grow up from that high to that high (indicating), from six inches to a foot, and then along in August, late in August, it would shoot up, the stems shoot up to two feet high, that is blue stem——

Mr. Taylor: That is bluejoint.

The Witness: That is bluejoint, it grew on rich land, but it grew on a cold land. It is a grass that started very late, it started very late in the spring and it didn't head out until along in August.

Mr. Palmer:

Q. Which character of grass was it that grows on these flats?

A. It was this here tall grass.

Q. That you first described?

A. First described, and this here blue grass, blue-stem, and *them* you get up above that you get into the high land, that hard land we used to call it, there is a grass grows and it shoots up and there is a head on it with a big beard on it, long beard on it, something like barley beard.

Q. That is called what?

A. That is called high land grass.

Q. Was there any of this high land grass that grew on this land?

3265 A. No, none of that high land grass that grew on this land.

Q. Over in section 29, that Waddington land, that is west of the *Buttsland?*

A. Yes, but Waddington,——

Q. What condition was that land in in those early days?

A. He had two piece- of land there, understand. I knew the land as the Chilson land, there is a Bill Chilson land and a Jim Chilson land.

Q. That is the land in 29?

A. Yes, sir, that is the land in 29. Most of that is on this overflow land except a little on the west side of the Bill Chilson land.

Q. That is which quarter of 29 or which half of 29?
A. That is in the west half.
Q. Down in 32, this land marked August Larson land, that is west of the Erickson and Johnson places?
A. Yes, Ole Larson?
Q. August Larson it is marked here.
A. August Larson, he owns land in 27 and section west.
Q. Tell us what you can about 32.
A. That land, that was similar to this other land; I don't think there ever was a man on it that made a living on it.
Q. The Blackmer land up in 20, did you know Blackmer?
A. Yes, sir, I knew Blackmer.
Q. How did he get along on this Red river valley land?

Mr. Pinkney: We object to that as incompetent and immaterial.

A. He didn't make it much. There was a strip down through Blackmer's land that was higher than it was either west or
3266 east of it. I think some of that, there is a ridge down through there that this high land grass grew on.

Mr. Palmer:

Q. So that he had some crop?
A. Yes, sir.
Q. That section 16, that school section; what shape was that in?
A. I cut hay on that section years ago, it was always kept, has always been hay land.
Q. How was it as to overflow?
A. The east part of it was subject to overflow pretty often and then there is a slough comes down through it; most generally when there was water down on the Minnesota side there was water in there.
Q. Subject to overflow?
A. Subject to overflow, yes, sir; that is one of the outlets of Lake Traverse.
Q. And the land known as the Crothers' land, belonging to Rydell, what shape was that?
A. That was never calculated to be farm land and I guess it never was farmed until in the past I don't think that was ever farmed until 19—I don't know, never much of it ever farmed.
Q. How is that land south of that quarter that Mr. Towle has owned?
A. I think Mr. Towle broke that up, commenced breaking on that in 1914, I think.
Q. Was it ever broken up before?
A. No, sir.
Q. Ever considered as agricultural land before?
A. No, never considered as agricultural land before.
3267 Q. Take this little lots along next to the river, Swenson, Quidding and the Great Northern Railway Company?
A. That Quidding land laid there until 1889. I think it was

1889 Quidding contested that land. Prior to that it was taken as a tree claim, it laid there, nothing was done until he came here, in 1889, he contested it.

Q. How did he get along on there as to crops?

A. Juleen, he lived there until something like 1897 and he moved out with a boat, come up to my place, come across with a boat and moved out and went northeast and lived on a quarter section mile and a half from me.

Q. What is the character of the building along on these lands next to the river?

A. On the Fundeen place?

Q. That is, the Quidding land?

A. The Quidding land, after he got it through contest, he contested, I think, 1889, and in 1890 he got it. Next year he come on and built on it. He put up the house; it is a small house, basement, with a cellar under it, and he stoned the cellar, and he never had anything on it but a hay barn, and on the Juleen place——

Q. The Juleen place, that is the northeast quarter of 21?

A. Northeast quarter of 21; there was a small house with a one story, 8 foot posts.

Q. When was that put up?

A. That was put up, I couldn't tell the year of that but it was put up along in the nineties, and he had a hay barn, hay roof barn.

Q. Otto Anderson, southeast of 21, that was homesteaded
3268 along in the nineties, I think, 1889, something along there.

Q. How did he get along?

A. He didn't homestead it in the first place; this here man named Jenson homesteaded that.

Q. How did he get along?

A. He didn't make it.

Q. And did Otto Anderson make it?

A. Otto Anderson, he come after Jenson, put up a stone house on it.

Q. Where did he get the stone?

A. Off from the place, and then Otto Anderson got it and he put up a house. I couldn't say how big a house it was, not a very big house and he used the stone house for a barn, and Otto Anderson put up a granary on it.

Q. How did Otto Anderson get along on the place?

A. Otto Anderson moved out.

Q. Did he lose it on a mortgage?

A. Yes, sir, I think he lost it on a mortgage.

Q. The Lundberg place down there, what kind of a place has that been?

A. He has got some of this, Lundberg now at the present time, he has got some land up on Section 28, I think.

Q. Don't you mean the northwest——

A. No, it ain't in 28, it is on the north side of 34.

Q. He has got some land there that he can work?

A. He has got some land there that he can work. I guess it is the

highest point of land between Blackmer and White Rock, I think it is.

Q. But down on his homestead place southwest of 34?

A. That is most of the years he goes out in a boat or else comes up north and goes around and down on the railroad.

3269 Q. Has that always been true?

A. Yes, sir, except 1895, them dry years when the whole country was dry.

Q. I call your attention to the lands that were overflowed in 1915 and 1916 and will ask you what has been the value of those lands for agricultural purposes since you have known them.

A. All the land that is overflowed in 1915 and 1916 excepting some lands on the outskirts where the water goes off knowing the land as I do, now—in fact, in the eighties I was hunting for land and there was no land there not under water—since then, knowing the land as I know now, you give me a half section of land and I had to go on it with my bare hands without any property to make a living, you could give it to me and I wouldn't take it, and live there ten years.

Q. Why Not?

A. Because, I couldn't make my living on it.

Q. Why not?

A. Because the land under water and alkali streaks wouldn't produce a living.

Q. Has that been the general character?

A. That has been the general character since I have known the land.

Q. And its value?

A. Value for agricultural purposes, I calculate a man can't make as much as he would working out by the month.

Q. And its market value for agricultural purpose, what would you think it is?

A. Nothing, I calculate no value.

Q. Is it of just as much value now as it ever was?

3270 A. Yes, sir, just as much now as it ever was. That is, for a series of years, if I hadn't known the land, hadn't known the condition of the land before and since, there was a time in 1895 it might have been worth something.

Q. In 1909 and 1910 were the conditions dry then?

A. The conditions of the country was dry but there was lots of that land along them fractions couldn't be worked. There was some of that on—as I said before, there is the north lots of that Quidding farm hadn't been plowed only once since 1902.

Q. Where are the early settlers or homesteaders?

A. All gone. I don't think you could sell that land to a man that has lived here for years for farming purposes that has to go onto it and live.

Q. The year 1915, will you describe the conditions as to rainfall according to your best recollection?

A. I will——

Q. Begin with 1914.

A. 1914, commenced to rain in June, I think, and we had lots of rain in June and July, and then in 1915 it commenced to rain, well, all the seeding wasn't done, it commenced to rain and for the times, the years I have been here, there has never been any season to compare with it, with the amount of rainfall that fall. In 1915,—my land is all high and well drained—I don't suppose there is a half section in the township of Fairmount that is drained so well as my land is, and I dug postholes to string electric wires on 40 rods from the corner to my buildings. I dug them postholes in August and after first digging out the first depth with a spade, the way I got the water out of that or the rest of the dirt there, I stuck my spade down like this (indicating) and pulled it up and scraped it off and kept on doing that until I dug a hole 4½ feet that way.

3271 Q. That was in August, 1915?

A. That was August, 1915; and after I got them holes dug they stood full of water within six inches of the top of the ground until the forepart of October, and then it begun to settle and along about the middle of October the electric line man come and set these posts into these holes and they had long-handled spades and they undertook to dig with them, though they would go down half a foot deeper, but they gave it up and set the posts in the same holes I made.

Q. Gave it up on account of what?

A. On account of being so wet and that land, there never was a drop of water run across it only what fell on it, I will swear to that. There is a ditch on the northside of that within 5 rods of that place, if there had been any chance the water couldn't get over.

Q. How did those conditions continue through the fall of 1915?

A. In the fall of 1915 it was—I had land that I broke up in 1881, that was a wet spring, that I couldn't plow in the fall of 1915.

Q. Why couldn't you plow?

A. Because it was so wet, and in the next spring, 1916, we put in our crops and this land the 1st of June wasn't plowed or put in, couldn't do it, and the boy, the place was rented to the boy, he was carrying it on that year, and he went to Montana to visit a brother and along in the first part of July I went on some of that land and put seven horses on a plow and I plowed up, rooted it up, and got it into millet, and then I had some land further east across the ravine that I broke the same year——

3272 Q. 1881?

A. 1881, and there was no crop on it, it wasn't plowed.

Q. There wasn't any crop when?

A. In 1916.

Q. On what account?

A. On account of being so wet.

Q. Now, what was the crop condition on your land in 1916?

Mr. Pinkney: Objected to as incompetent.

A. In 1916, I cut my wheat and I threshed on an average about 7 bushels to the acre, machine measure, and that wheat weighed 48 to 49 pounds to the bushel.

Mr. Palmer: What should it weigh normally?

A. 60 to 62 pounds, marquis wheat. My oats, I never cut any oats only about 2 acres and a half east of the buildings and that was on high land, and it took four pounds of standard Manila twine to bind it to the acre, and I cut it, shocked it, hauled it, stacked it and threw it over the fence during the winter to the cattle, there was nothing in it.

Q. What was the trouble in 1916?

A. Wet; you dig down anywhere on that high land a foot and you would strike water.

Q. What do you recall about the rainfall there that season?

A. The rainfall in 1915 and 1916 I never have seen anything to compare with it.

Q. What was the crop condition in your neighborhood there?

A. It was poor and there was crop on north of me on lands
3273 that never was any water on it only what fell on it, it wasn't cropped.

Q. It wasn't cropped at all?

A. Wasn't cropped.

Q. Why?

A. It was wet; that is, 1916?

Q. Yes.

A. Yes, sir, and that land wasn't plowed at all in 1916 and it wasn't plowed in 1917 until October of 1917——

Q. On account of wet——

A. —excepting 7 acres on the south side of that quarter, the southwest quarter of section 23, and I have the charge of that land from a man from Illinois, Toulon, Illinois. I have charge of it and a man by the name of Dorsey rented the south half of that land.

Q. That is land that is affected at all by this river?

A. That is land that is not affected by the river, no sir, or any other river and this is on the east side, he couldn't plow it and this spring, along in June, I says to him——

Q. Never mind what you said.

A. He went on there and plowed 7 acres and put it into—drilled it into corn along late in July. That was the only lot of that 40 acres that was plowed this year until October.

Q. Now, Mr. Bruce, in general in your locality there, would you say there was practically a crop failure in 1916?

A. Yes, sir, practically a crop failure.

Q. On account of wet conditions?

A. Yes, sir, on account of wet conditions.

Q. There has been a lot of talk about cat tails growing on this land next to the river. What is the condition as to growth of cat-tails on the lands away from the river this year and last year?

3274 A. Take it away from the river where the water stood in 1915 and 1916, it is all cat-tails same as the river.

Q. Does that condition obtain where cat-tails do not ordinarily grow?

A. Yes, I never saw many cat tails in fact, until this year,
3275 1917. I never knew cat-tails in this country only occasionally.

Q. This cat-tails condition is a general condition.

A. Yes, sir, is a general condition.

Q. And the crop failure condition of 1916 was a general condition?

A. A general condition.

Q. And what would you say as to a partial crop failure condition in 1917 being a general condition?

A. That was a general condition. In the township of Taylor I don't think there was one-third of the land cropped in 1917.

Q. On account of what?

A. On account of wet.

Q. In the spring?

A. In the spring.

Q. That is land not affected at all by this river or overflow?

A. No, sir, not affected at all by this river.

Q. Tell us about the roads and bridges in your locality away from this river through 1916 and 1917.

A. In 1916, 1915 and 1916, I was road commissioner of the town of Taylor, I had charge of all roads. And in 1915, the water ran across the road to the extent that *that* I had to put in across the road culverts to make the road passable, between culverts, costing an amount between $500 and $600 and 1916 the same or a little more perhaps.

Q. Additional culverts?

A. Additional culverts.

Q. Were those places where culverts had been before re-
3276 quired?

A. No, they was places where there had not been culverts before but there might have been a half a dozen places where there had been old wooden culverts taken out and had caved in and we put them in.

Q. Were grades washed out?

A. Yes, sir, grades was washed out many places.

Q. And bridges?

A. No, not no bridges, there was culverts, there is no bridges in that town. There was across the state road that runs up by my place upon the section line between 14 and 15, there is a 36 inch culvert, and the water in 1916 washed that culvert out as there was spaces on each side of the culvert about a foot or two feet wide, that it washed out completely and it washed out under the culvert and carried it away, the dirt.

Q. Now, was that condition of wash outs of roads and culverts, was that general throughout 1916?

A. Yes, sir, that was general through the town.

Q. And throughout this surrounding community?

A. Yes, sir, that side of the river there.

Q. What was the condition of roads here in the town of Fairmount, down around Blackmer?

Mr. Pinkney: We object to that, it doesn't appear that he knows anything about these conditions.

Mr. Palmer:

Q. Do you know anything about the conditions of the roads from Blackmer down to the state line and northerly from that prior to 1915?

A. Yes, sir, I know all conditions of roads I guess all years.

Q. What conditions were those roads in as to being graded and passable?

3277 A. 1915?

Q. Yes, before that.

A. Oh, before that they was traveled over the road.

Q. What condition were the roads in, well graded roads?

A. Good, fairly passable condition.

Q. Fairly passable condition?

A. Yes, sir.

Q. It has been testified it would cost something from $300 to $600 a mile to put them back where they were in 1915. Mr. Bruce, what would you say as to that?

Mr. Pinkney: We object to that as incompetent and immaterial, it doesn't appear that this witness knows anything about their condition.

A. That is, from Blackmer down?

Mr. Palmer:

Q. Yes; well, or take the roads generally on this overflow land which has been testified it would cost from $300 to $600 a mile to put them back in the shape they were in in 1915.

A. The roads from Blackmer, from the bridge across the slough down there west of Blackmer up to Blackmer, there had been very little work done on it.

Q. Ever?

A. No, never a great deal in any season.

Q. Take the other roads around there.

A. And the road running north of that they have done some work there this summer, I haven't been there since the summer, but they have done some work north of Blackmer up through there, they have done some work, I have run a car down through there and my wife was with me and she thought——

Q. What shape were they in?

A. They was rough, you could not travel in the road you 3278 had to travel on the sides.

Q. Had they been good, well graded, smooth roads or rough roads?

A. Always cheap graded roads.

Cross-examination.

By Mr. Pinkney:

Q. What do you call high grade roads?
A. High grade roads?
Q. These were cheap grade roads, what in your opinion is a high grade road?
A. A high grade road is a road that is graded 18 or 16 inches high.
Q. If you don't need 16 or 18 inches of grade you couldn't have a high grade road unless you put it all in, could you, according to your judgment?
A. Oh, yes, there is places where a road that is 16 inches——
Q. I just asked you that question. I wish you would answer it without making a speech with each answer.
A. Read the question.
(Question is read by the reporter.)
A. I don't understand that question.
Q. You can't answer that question?
A. No, not high grade.
Q. Mr. Bruce, how far do you live from Fairmount, Richland County, North Dakota.
A. I live——
Q. Just how far do you live?
3279 A. 8 miles and a half.
Q. In which direction?
A. South, east and south.
Q. What?
A. Southeast.
Q. And how much land have you got over there?
A. I got 320 acres.
Q. That is in Minnesota?
A. That is in Minnesota.
Q. That is on the east side of what is known as the Bois de Sioux river?
A. No, it — down on the east side of the marsh: I don't recognize this marsh as a river.
Q. You don't recognize that Bois de Sioux river at all?
A. Yes, sir, a river is a river,——
Q. Wait a moment, I don't want any speeches.

Mr. Palmer: And a marsh is a marsh?
A. And a marsh is a marsh.

Mr. Pinkney:

Q. You live on the east side of what you are pleased to term a marsh?
A. Yes, sir.
Q. You live in the State of Minnesota?
A. Yes, sir.

Q. Your land lies, as I understand it, the nearest of it, about a half mile from this marsh, as you term it?

A. No.

Q. How far does it lie from this marsh, the nearest point?

A. The nearest point is about, on the Minnesota side, in about 10 to 20 rods, 30 rods.

3280 Q. You own 320 acres of land?

A. I own 320 acres of land.

Q. How long have you owned that tract?

A. I have owned the southwest quarter of 26 since the 9th day of June, 1881.

Q. How about the other quarter?

A. And the other quarter I have owned since about, I think I came in possession of the land about 1887.

Q. You have owned one quarter since 1881, and the other quarter since 1887?

A. Yes, sir.

Q. Have you been cultivating this land since you owned it?

A. Yes, sir.

Q. Yourself?

A. Up until 1915.

Q. You have been farming it yourself?

A. Farming it myself.

Q. How much of it was under cultivation or is under plow?

A. There is 40 acres——

Q. Approximately how much; give a guess at it.

A. Any one year on an average about 225 acres that has been cropped.

Q. Balance is in pasture and hay land?

A. Yes, sir, the balance is in pasture and hay land.

Q. That has kept you pretty busy, farming that amount of land?

A. Yes, sir, I have been a hard working man.

Q. And kept you very close at home?

A. Yes, sir, I have boys of late years.

3281 Q. It didn't keep you so close at home but what you could run all over the country and know what other people did?

A. I never run over the country much, only to go to town. I know when the water was high, my market town was Fairmount.

Q. You testified to keeping a memorandum of weather conditions and of other happenings in the neighborhood of 15 years?

A. Yes, sir.

Q. From 1881 to 1896 that would be wouldn't it?

A. Yes, sir.

Q. You have got that with you?

A. No, sir.

Q. Why didn't you bring it?

A. Because I haven't it now.

Q. You have destroyed it?

A. Yes, sir, I destroyed it.

Q. Why did you discontinue it?

A. I discontinued it.

Q. Why did you discontinue keeping it?
A. I got older and I didn't care to do it as when I was younger.
Q. What is your present age?
A. I am 63 years the 24th day of this month.
Q. You are in middle life?
A. Yes, sir.
Q. As I understand you, Mr. Bruce, the Bois de Sioux river has its source in Mud lake?
A. Yes, sir.
Q. On section 33 of Fairmount township, is that right?
3282 A. Yes, sir.
Q. And all that portion of the Bois de Sioux river that you know anything about lies to the south of Mud lake does it?
A. I know about this but I know more about that down there.
Q. You told Mr. Palmer that the Bois de Sioux river commenced in Mud lake in section 33, Fairmount township?
A. Yes, sir.
Q. What is its course from there on, what direction does it run?
A. The water runs all north, outlet of Lake Traverse.
Q. The water runs all the way from Mud lake north, does it?
A. Yes.
Q What do you call this portion of what we call the Bois de Sioux river from Mud lake to the south?
A. Lake Traverse Marsh.
Q. Well, it is all lake Traverse marsh, as I understand you, from Lake Traverse clear up to Lake Mud in Fairmount township?
A. Yes, sir.
Q. That is all lake Traverse marsh?
A. Yes, sir.
Q. How wide is that marsh on the west side of the river from Lake Traverse up, in a general way?
A. Oh, it is around two miles, two and a half.
Q. You think it would average about two miles wide?
A. Yes, sir, I think it would average about two miles wide.
Q. On the west side of the marsh in North Dakota?
3283 A. Yes.
Q. Then all of the lands from Lake Traverse north to Mud lake for a strip two miles wide——
A. On an average.
Q. — on the west side, are marsh lands?
A. Yes, sir, on an average.
Q. Can you produce crops on marsh lands?
A. Yes, sir.
Q. Can you produce just as good crops on marsh lands as you can on lands not marsh?
A. Sometimes better, if it is dry.
Q. How dry has it got to be, before land ceases to be marsh land and becomes dry land?
A. It wouldn't have much water on it.
Q. Do you pretend to tell the Court that all of the lands on an

average width of two miles on the west side of this marsh are lands not susceptible of crop production?

A. Not all the way.

Q How much of the way?

A. Up as far as Blackmer, or down as far as Blackmer.

Q. Which way does the water in this marsh flow?

A. Works north.

Q. From Lake Traverse clear up to the Red river, does it?

A. Yes, clear up to the Red river.

Q. What would you say about the lands north of Blackmer how wide a strip is there on the west side of the marsh that is marsh land?

A. A mile, I should say, maybe a little more in places.

Q. Then practically from Lake Traverse clear up to Mud lake in section 33 Fairmount township, there is a strip of land on
3284 the west side of this marsh, as you call it, from two miles to a mile and a half in width, that are marsh lands?

A. Yes, sir.

Q. And always have been?

A. Yes, sir, always have been called marsh lands.

Q. Are they in fact marsh lands? You didn't say they had always been called marsh lands, you said they were marsh lands

A. Yes, sir, they are marsh lands, according to Webster's dictionary, they are marsh lands.

Q. What is a marsh?

A. A marsh is a piece of land that is occasionally covered with water, Webster's dictionary.

Q. I thought marsh land was a piece of land so wet it wasn't susceptible of cultivation at any time.

A. You don't know the definition; the authority we have, I guess, is Webster.

Q. That is the Minnesota Webster definition?

A. No, that is the definition, that is the recognized definition of a marsh.

Q. Then, according to that definition, if the land was susceptible of cultivation nine years out of ten it wouldn't be marsh would it?

A. That land never was cultivated on an average nine years out of ten.

Q. It has not?

A. No, sir.

Q. Do you pretend to tell the Court that this land from the south line of North Dakota clear up to Mud lake and further up hasn't been cultivated every *every* — up to 1915, since 1890, that whole strip?

3285 A. No——

Q. From 1890 up to the year 1915?

A. There is places in there been cultivated and places not been cultivated.

Q. Yes, and there is places in your land not been cultivated?

A. Not on account of water.

Q. It hasn't been cultivated?

A. Well, I guess I have a place about twenty——

Q. What land do you know of between 1890 and 1915, from the south line of North Dakota clear up to Mud lake that hasn't been cultivated?

A. There is lots of it.

Q. Tell one piece?

A. There is pieces in section 22.

Q. Section 22 what?

A. Township 129, 47.

Q. How much?

A. The whole of the fraction, the north fraction of 22 has not been plowed only once since 1902.

Q. Who owns that?

A. I don't know who owns it, Quidding used to own it.

Q. Who owns it now?

A. I don't know.

Q. Who has owned it since 1890 to the present time?

A. Quidding has owned it a part of the time. Quidding has owned it up until 1915, something like that. Quidding worked it in 1915, but I think he sold it before that, I understand.

3286 Q. I thought you told me it hadn't been cultivated at all?

A. The north lot hasn't been plowed, I say, only once, and there hasn't been a crop on it.

Q. It might have been used for pasture or hay land?

A. There is, it hasn't been used, no, it hasn't been used for pasture.

Q. Nor hay land either?

A. No, there is no hay growing on it, I think today you will find it is bare, the water has killed everything out on it.

Q. The water has?

A. Yes, sir.

Q. I thought you said that this big heavy grass grew in this marsh land?

A. It did, I spoke of it in former days.

Q. It don't grow there nowadays?

A. Not such grass as then.

Q. Why not?

A. Because this grass seeded itself and when that was stopped so it didn't seed there come a different kind of grass in there.

Q. Tell us another piece of land in that territory that has not been cropped, and when I say cropped I don't mean that you shan't include in your consideration pasture and hay land?

A. 27, there is a fraction in 27 that has not been cropped?

Q. What fraction?

A. It is just across the river, it is known as the Swanson land.

Q. How much of the Swanson land in 27 has not been

3287 cultivated?

A. There hasn't been five acres of it cultivated since 1902, not five acres.

Q. What kind of land is it?

A. It is marsh land.

Q. How many acres of it?
A. I don't know how many acres there are. There is quite a big piece in there, it runs a half mile north.
Mr. Palmer: How many acres marsh?
A. All marsh land.

Mr. Pinkney:

Q. How many acres?
A. All the land in there that belongs to Swanson.
Q. How many acres, that is what I want to know?
A. I can't tell.
Q. You can't tell how many acres it is; you know it is all marsh?
A. Yes, sir.

Mr. Palmer: Why don't you take the map and figure it out?
Mr. Pinkney: He didn't have the map when he obeserved these things.

Q. Go on and tell us another piece, that is, if you can?
A. A good deal of the land in 21, I will say all of the northwest quarter of 21, has not been cultivated.
Q. 21 where?
A. In that same township and range.
Q. 129-47?
A. Yes, sir.
3288 Q. Hadn't been cultivated, no crops produced on it since 1891, up to 1915?
A. From 1892 is my testimony—I mean 1902.
Q. I mean from 1891 up to 1915.
A. From 1902 up to 1915, 1914 or 1915.
Q. Just wait, I mean to cover the period from 1891, up to 1915.
A. Oh, yes, there was—that land, there was land in there cultivated in 1895, 1894 and 1895, it was partly dry.
Q. This land has all been broken up on this quarter?
A. I think it has.
Q. You know, don't you?
A. No, there might be a little in that southwest,—there is a big slough,——
Q. Why wasn't it?
A. There is a big slough runs in there, it could have been cultivated in 1894 and 1895.
Q. Why wasn't it cultivated every year, if you know?
A. It has been so wet.
Q. Covered with water?
A. Covered with water and wet.
Q. That is three pieces, tell us another?
A. There was a lot in the northwest section of 21, a big piece in there on the west side that has not been cultivated for years.
Q. Of how great an extent.
A. I never measured it you know, only as I went by.
Q. You have seen it every year?

A. Yes, sir, I have seen it every year.

Q. You went by all these pieces and looked to see whether
3289 they were flooded?

A. I didn't go by—you go through the country——

Q. That is four pieces. Go on give another.

A. In the southeast of the same section there is lots of land that has not been cultivated.

Q. How much?

A. I couldn't tell how much, I didn't measure.

Q. You didn't look to see the quantity?

A. No, sir.

Q. That is five pieces; give us another?

A. There is lots of land in all those sections clear down to Lake Traverse.

Q. Just describe them. I am not asking you — go below the state line of North Dakota, keep above the line and tell us. Those lands you told us about are all in North Dakota aren't they?

A. Yes, sir.

Q. Pick out another; you got five.

A. I will have to have a map.

Q. I want you to tell me the pieces of land that haven't been cultivated by reason of being marsh lands in North Dakota?

A. There has been a lot of this here L. D. Butts land hasn't been cultivated all the time, section 28, and there is lots of this land, Eric Stafne, in 28 hasn't been cultivated and then this here Waddington land, section 29 and 28, there is some of it hasn't been cultivated all the time.

Q. I ain't asking you all the time, I am asking you from 1891, up to 1915.

A. Some of it has not been cultivated and some of it has.

Q. How much more can you pick out?

3290 A. Pick out some on all these sections down through here. On all those quarter sections there is land that has not been cultivated a good deal of the time since 1902 up until 1915.

Q. When you say there is land on all of the sections that has not been cultivated, do you mean to take the land that was in hay and pasture land, describing that as land not cultivated?

A. No, that of course, that ain't supposed to be cultivated?

Q. Whenever there is a piece of hay or pasture land on a tract of land then your opinion it wasn't cultivated?

A. No, that wasn't cultivated——

Q. Hay and pasture is not a crop in your judgment, is it?

A. Yes, sir, it is a crop.

Q. If it has hay and pasture on it each year it would be cultivated wouldn't it?

A. I also add them, the same as it would be if it was pastured and cropped in its wild state.

Q. When you refer to lands not being cultivated, you mean to include all the lands where there is hay and pasture land on it?

A. Yes, sir.

Mr. Palmer:

Q. Or the wild pasture or tame hay pasture?
A. Both, if one goes in they both have to go in.

Mr. Pinkney: Do you think you know more about the lands that have been cultivated in that territory than the man that lived on them?

3291 A. No, sir.

Q. You think they would know more about it than you?
A. Yes, sir.
Q. You wouldn't pretend to say, if these men have testified in this case that the lands have been cultivated and crops produced from 1891 up to 1915, that is all a mistatement, do you?

Mr. Palmer: I object to that, the men who lived on them, haven't testified to any such thing.

A. If they have testified that this land has all been cultivated from 1891 to 1915 they have testified to something that is not true.
Q. And you know more about it than they do?
A. I know that much. I don't know whether I know anything more than they do but they said something that isn't true.
Q. That would be your judgment as to men who have testified to producing crops on any of this overflowed land in 1915, and 1916, would it?
A. No, sir, some of it that has been dry and cultivated in 1915.
Q. I said, this overflowed land.
A. There was some of this overflowed land that was overflowed in 1916 has been suitable for crops a number of years.
Q. You know this also to be true, do you not Mr. Bruce, that a great deal of this land lying on the west side of the Bois de Sioux from the south line of North Dakota in North Dakota has been cropped and cultivated and crops produced and harvested on it every year since 1891, up to 1915? You know that to be true?
A. I know there is some land in there cropped every year, from

3292 Q. You said every year, you don't need to enumerate the years; and it lay within a mile or a mile and a half or two miles from the Bois de Sioux swamp as you call it or Lake Traverse marsh?

A. Marsh, but in the meantime part of this land has not been cultivated.
Q. When I want you to answer that question I will ask it.
A. I want to tell it all if I think it ought to be told, even if it isn't asked. If you don't ask me about things I want to tell I will tell you. You can't bluff me anyway.
Q. I want you to answer the question and don't make a stump speech.
A. I am here to tell the truth and all the truth and I am going to tell the whole truth.
Q. You are going to tell it according to your recollection?

A. According to my recollection.

Q. Mr. Bruce, these wet seasons that you have talked about, from 1881 up to 1915, I take it that many of those were overflows that occurred in the spring break-up, weren't they?

A. Yes, sir, many of them.

Q. The great majority of them?

A. The great majority of them.

Q. Those break ups and overflows occurred when the snows were melting?

A. Yes, sir.

Q. And passing off?

A. Yes, sir.

3293 Q. And during such seasons of the year these lands bordering this marsh and the Bois de Sioux river were overflowed to some extent?

A. Yes, sir.

Q. And in those times the water passed off rapidly, didn't it, when the snows were melted?

A. Yes, sir, off of lots of that land it passed off.

Q. And the farmers were able to crop it and harvest their crops?

A. Yes, sir.

Q. From year to year?

A. Yes, sir.

Q. This is true, isn't it Mr. Bruce, that in your spring break ups the river from the south opens up and commences to flow earlier than it does to the north of you, isn't that true?

A. Well, it is way up but through this district it all breaks up about the same time.

Q. Isn't it true, and don't you know this to be a fact, that frequently the river is open and flowing down at White Rock, here at Fairmount and at Wahpeton, when it will be blocked up with snow and ice at Fargo?

A. Yes, sir.

Q. At such times, weren't those the times when you saw the Bois de Sioux when the water was running to the south, wasn't that the time?

A. I don't supposed it was opened up at that time.

Q. You don't pretend to say that the Bois de Sioux river flows to the south, do you, in its natural flow?

A. No, not in its natural flow.

3294 Q. It is only in those seasons of the year when the river to the north hadn't opened up yet, isn't that true?

A. Yes, sir, when the water wasn't opened up.

Q. So that the water could pass freely up the channel?

A. Yes, sir, but it would go down quickly.

Q. And when the river opened up all this apparent flow of the Bois de Sioux to the south immediately ceased and went north?

A. Yes, sir.

Q. And that has been true ever since you have been here?

A. Yes, sir.

Q. You saw more water in the Boise de Sioux river from Lake

Traverse up to say Wahpeton in the year 1915 and 1916 than you ever saw before in your life, higher up?

A. No.

Q. What other years did you see——

A. In the same summer.

Q. Yes.

A. Yes, sir, in the summer.

Q. In the summer of 1915?

A. Yes, sir.

Q. And in the summer of 1916?

A. Yes, sir.

Q. The water was higher in the Bois de Sioux river than you have ever known it before in this country?

A. Yes, sir.

Q. And it stayed there longer, didn't it?

A. Yes, sir.

Q. Isn't it true, Mr. Bruce, that in the summer and fall of 1915 this country was flooded by the overflow of the Bois de
3295 Sioux and the water stood there and stayed on and froze up in the fall?

A. Yes, sir.

Q. And remained right on through the winter?

A. Yes, sir, stayed through the winter.

Q. Then the spring freshet came on in 1916?

A. Yes, sir.

Q. And that flooded the land still more?

A. Yes, sir.

Q. And during the whole summer and spring of 1916 this land was flooded by this Bois de Sioux river?

A. Yes, sir.

Q. You never saw that before in your life?

A. No, sir, not in the summer, not that high.

Q. You say that the early settlers of those lands all starved to death and moved away?

A. No, I didn't say starved to death; I don't think there is a man in this country that starved to death.

Q. I used the expression in the same sense you did, I understood you to say that a man couldn't give you a half section of this overflowed land because it was of no value and you couldn't make a living there, did you not?

A. I wouldn't take it and live on it ten years, I said, *I said*, if they would give it to me.

Q. There hasn't anybody offered to do that with you?

A. No, sir.

Q. I have also understood you to say that those old settlers couldn't make a living and were starved out.

A. I didn't say they starved.

Q. They had to move away because they didn't make a living?

3296 A. Yes, sir.

Q. Did you know a man by the name of Erickson who was an old settler?

A. Yes, sir.

Q. Been here as long as you have?

A. Yes, sir, about as long.

Q. Do you think he is in the condition of starving?

A. I told you——

Q. Well, just tell me if he isn't worth three times as much as you are?

A. No, I don't think hardly.

Q. If you told the truth to the assessor and he did, would that be good evidence of what you are worth?

A. I am the assessor over there, have been for a number of years.

Q. You assess yourself?

A. Yes, sir.

Q. You know Mr. Erickson to be a pretty wealthy man?

A. Yes, sir.

Q. And he is an old settler?

A. Yes, sir.

Q. And he didn't have to move away?

A. Mr. Erickson, he is a bachelor, he lives by himself and I have been in his place and if you and I——

Q. Don't talk about me, talk about yourself.

A. Living in the shape and way that Mr. Erickson does we wouldn't calculate we was living.

Q. You don't know but what he is enjoying himself as well as you are?

A. Yes, sir, I suppose he is enjoying himself.

Q. That is one man that is an exception to the rule you
3297 have announced as to early settlers?

A. Yes, sir.

Q. Do you know of any other settlers that haven't starved here by reason of their inability to live on this land?

A. There is Mr. Lundberg, he is there.

Q. He didn't starve there?

A. No, sir, but he has the highest point of land between Blackmer and White Rock *Rock*.

Q. It was flooded too?

A. Yes, sir, it was flooded.

Q. And that was about the same kind of land where you told the court a minute ago that the early settlers had to move out because they couldn't make a living?

A. Yes, sir, part of it.

Q. Isn't this true, Mr. Bruce, isn't it common sense that whether a man gets along in any locality is largely dependent upon the man, isn't that true?

A. Yes, sir, of course, it depends on the man.

Q. You are an early settler?

A. Yes, sir.

Q. You are successful and didn't starve, did you?

A. No, sir.

Q. You know lots of men that came here about the time you came and are here and prosperous men?

A. Yes, sir.

Q. And settled on these so-called marsh lands, didn't they?

A. I guess Erickson and Lundberg are the only ones I recall.

Q. But you don't pretend to say they are the only ones, do you?

3298 A. The only men that has made more than a living.

Q. You don't know how much they are worth, do you?

A. No, sir, I don't know how much they are worth but I know what lots of them ain't worth.

Q. As I understand you, Mr. Bruce, your land over in Minnesota was wet in 1915 and 1916?

A. Yes, sir, very wet.

Q. And the season of 1915 was very wet?

A. Yes, sir, very wet.

Q. What part of the season?

A. From June until along towards October, last of June middle of June.

Q. Do you remember, that distinctly?

A. Yes, sir, June, July, and August.

Q. How was the season of 1914, summer season?

A. The summer season of 1914, it was an average kind of a spring but along through June, last of June and July, very wet.

Q. How was the fall of 1914, pretty wet or pretty dry?

A. Take it the part of the fall, it was wet but later on in the fall it got dryer, didn't get so much rain, we don't as a general thing.

Q. How far do you live from the village of White Rock?

A. I live three miles north and half a mile east.

Q. The weather conditions at your locality would probably be about the same as they would be here, don't you think?

A. It varies in different places, some seasons in different localities more rain than in others.

Q. You think a distance of three or four miles would be likely to make a very preceptible difference in the weather conditions in any certain season?

3299 A. You know the showers there they will go through in one locality and the next locality they won't.

Q. You have a pretty accurate recollection for weather conditions each year from the time you came here to the present?

A. Yes, sir, better I suppose, than the ordinary man. I kept a record of it most years.

Q. Tell me what kind of seasons the spring and summer of 1897 were?

A. 1897, in the fall——

Q. I didn't ask you about the fall, I asked you about the spring and summer of 1897.

A. In the spring of 1897 the snow went off and we had lots of water. There was a lot of snow in, the fall of 1897 and then in the spring, there was more rain in the spring and summer of 1897 than there was in 1895 and 1894.

Q. I didn't ask you anything about a comparison; I asked you what the weather conditions were in the spring and summer of 1897.

A. That is what I was telling.

Q. You were making a comparison.

A. I have got to make you understand there was more moisture fell that year 1897 than there was in the year 1895 or 1894 or 1896.

Q. I don't know anything about the quantity or moisture that fell in 1895, 1894 or 1896. Will you tell us whether the spring and summer of 1897 was an unusually wet season of was it an average, normal season for rainfall?

A. It was a little above the normal.

Q. Wasn't that due to the heavy snowfall that you had in the winter previous?

A. Yes, there was more snowfall in that winter.

3300 Q. And your flood in the spring came from the melting snows at the spring break-up?

A. Yes, sir, that is where the water came from.

Q. That is where the water came from?

A. Yes, sir, that is where the water that flooded the country came from.

Q. Outside of that you didn't have a wet season?

A. No, but it was wetter than the season we had before.

Q. What season?

A. 1894, 1896 and 1895.

Q. Do you remember what the weather conditions were in 1893, in the spring and summer of 1893?

A. That was wetter than it was later, that was wetter than it was in 1894 and 1895.

Q. Was it only wetter through the spring break-up?

A. Yes, there was a little more rain and moisture fell.

Q. In the spring and summer of 1893 than the ordinary year?

A. Than in 1894 and 1895.

Q. Tell us what the rainfall was in the year 1908, in the spring and summer?

A. It is about on an average, I should say.

Q. Not abnormal?

A. No, sir, not abnormal, about average.

Q. What is your average annual precipitation in this locality?

A. I think it is——

3301 Q. Give it in inches.

A. It has been so long since I—I think the average is 17 to 19 or 20 inches, somewhere along there.

Q. Isn't it 22?

A. Might be with a series of years.

Q. Well the average annual precipitation.

A. Yes, sir, for a series of years, somewhere along there.

Q. And when you say 22, do you take into account the snows that fall as well as the rains that fall?

A. Yes, sir.

Q. You had a great deal of fun when you came here in 1881 by paddling around in a boat?

A. Yes, sir, I done lots of it, it was new to me.
Q. Running a boat on the prairie was new enjoyment?
A. Yes, sir.
Q. You came from the hills of Vermont?
A. Yes, sir.
Q. And you were how old?
A. I was 26 years old.
Q. Have a family?
A. No, sir.
Q. You don't mean to say you have been playing the old bachelor?
A. Yes, sir. I have been an old bachelor 9 years.
Q. I lived on 26 for 9 years.
Q. And still made a go of it?
A. Yes, sir, still made it go.
Q. I understand it is your opinion, Mr. Bruce, that these lands, these so-called marsh lands in Fairmount township, Richland County, North Dakota, are of practically no value for farm purposes?

3302 A. No, sir, not for farming purposes to make your living on.

Q. What would you say if it should appear from the evidence in this case, what would you say as to the soundness of your judgment, that some of these lands have sold in the last three or four years as high as $50, $60, $65 and $75 per acre?
A. I would say that they stuck suckers.
Q. You would still adhere to your opinion that they were of no value?
A. Yes, sir.
Q. And what would you say if it should appear in the testimony in this case that some of those lands, these overflow lands, have sold as high as $103 an acre; what would you say then as to your judgment, I mean land bordering the overflow lands, what would you say as to your judgment of their not being of any value?
A. I don't think that would make any difference because that land up next to that land the water goes down suddenly and they get crops on them every year.
Q. Do you know anything about that?
A. Yes, sir.
Q. What land are you taking?
A. Wallace Taylor has land, there isn't any better land anywhere.
Q. And Wallace Taylor's land was entirely flooded in 1916?
A. No, sir, I don't think so.
Q. If it should appear in the evidence that the great majority of his land that you speak of was flooded in 1916 and that he didn't produce any crop on it at all to speak of——

3303 Mr. Palmer: That is objected to as no such fact appears in the evidence.

Mr. Pinkney:

Q. —then his lands would be included in the marsh lands, would it, in your opinion?

A. No, I don't think it would because it is high land.

Q. How do you distinguish between marsh lands and lands that are flooded?

A. Because Wallace Taylor's land don't—I don't know of it ever being flooded only two years, that is in 1881 and 1916.

Q. What land does Wallace Taylor own, what lands are you talking about in Fairmount township that Wallace Taylor owns?

A. Wallace Taylor owns some in 5 and some in 4.

Q. Some of his land lies within a half a mile of this Lake Traverse marsh, as you have described it; doesn't it?

A. Yes, sir, I think so.

Q. And it all lies within a mile and a half of this marsh, dosen't it?

A. Yes, sir, I think it does.

Q. And it is comparatively of the same elevation as other lands in that locality, isn't it?

A. No, his land is higher than most of the land.

Q. And you think his is a fine farm notwithstanding the fact it was flooded in 1915 and 1916?

A. Yes, sir, and I think that and in 1881 are the only years I knew of its being flooded.

Q. You knew of its being flooded in 1915 and 1916?

A. I knew it was in 1916.

Q. And that wouldn't make it marsh land?

A. No, I don't think that come under because——

3304 Q. Wouldn't it be true of all the other lands as marsh lands?

A. No, sir; they have been covered for years and years and years.

Q. If it is true that these lands have not been flooded any years except for a temporary period in the spring break-up since 1890, 1891 up to 1915, they wouldn't be marsh lands any more than Mt. Taylor's?

A. If they hadn't been flooded, no, sir, more than M*t*. Taylor's.

Q. If they hadn't been flooded, I say, save for a little brief period of time at the spring breakup, they wouldn't be marsh lands would they?

A. No, sir, because land of that kind when it is wet the water stays on it.

Q. If it be true the water came on *it* the spring, stayed for a week or ten days and afterwards went off and they cropped and harvested a crop every year from 1891 to 1915, would such lands *by* marsh lands in your judgment?

A. I don't know as I understand the question. Not if the water went off.

Q. Can you conceive of them raisin*f* crops and harvesting them without the water being off?

A. No, sir.

Q. If they did harvest their crops and thresh them, then they wouldn't be marsh lands?

A. Yes, sir, but there is lots of land it don't run off.

Q. Answer the question?

A. I have seen some of the best crops in this country on marsh lands.

Q. Will you answer the question?

3305 A. That is my answer; some of the best crops I have seen in this country were grown on land never cropped but one year.

Q. If that land has produced crops every year for a period of 15 or 16 years and they had been harvested, would you still insist they were marsh lands?

A. Not if the water wasn't on them.

Q. Do you think they could produce crops if there was water on it?

Mr. Palmer: They might say so.

A. They might say they do.

Mr. Pinkney:

Q. I said if they did; I think they are just as truthful as you are.

A. I don't doubt it; they haven't any of them said they produced crops in water.

(At this time recess is taken until 1:30 o'clock p. m., October 16, 1917.)

3306 October 16, 1917, at 1.30 p. m.

(Cross-examination of WILDER E. BRUCE continued.)

Mr. Pinkney:

Q. Do you know Peter G. Smith?

A. No.

Q. Know the lands he lives on?

A. Yes, sir, I think so. He has always lived there, hasen't he? Peter Smith, way up here I know I have heard of Mr. Smith, I never saw him.

Q. Do you know whether his lands were flooded in the years 1915 and 1916?

A. No, sir.

Q. If they were flooded in 1915 and 1916 and had prior to 1915 produced crops every year for 20 years or more, would you say his were marsh lands?

A. I don't think——

Q. My question is directed—won't you listen to the question and answer it?

Mr. Palmer: Do you mean his land where he lives? No one has claimed that it was flooded.

A. I know his land wasn't flooded in 1881, it didn't reach up that far.

Mr. Pinkney:

Q. You did know whether they were flooded in 1915 or 1916?
A. No, sir, I didn't know.
Q. Do you know John H. Bolton?
A. I have heard of him and seen him in town; I guess he is a barber.
Q. Do you know whether he owns lands or not around this township?
3307 A. No, I don't know, I have heard, I only know by hearsay.
Q. Do you know where his lands are?
A. Yes, it is down on 21, I think—no.
Q. They are down in 22.
A. Might be in 22.
Q. Do you know whether his land was flooded in 1915 or 1916?
A. No, I don't know anything about that in 1915 and 1916 up here.
Q. He has testified that he owns the northwest quarter of 22, do you know where that is?
A. Yes, sir, I know where that is.
Q. You don't know whether these lands are within this marsh land territory that you have described, do you?
A. No, that is in the river territory. That is not in the marsh territory at all, that is on the Bois de Sioux river.
Q. Is any part of 32 in the marsh territory, section 22?
A. No, it is all on the Bois de Sioux river.
Q. Township 130, Range 47?
A. All on the Bois de Sioux river.
Q. Is any part of section 21?
A. That is all Bois de Sioux river.
Q. No part of that in the marsh territory?
A. No, that is on the Bois de Sioux river.
Q. Any part of section 28, same township and range in the marsh territory?
A. That is on the Bois de Sioux river.
Q. No part of that is in the marsh territory?
3308 A. No, sir.
Q. Is any part of 27, west half of 27?
A. That is in the Bois de Sioux valley.
Q. That isn't in the marsh territory that you have been speaking about?
A. No, I have said nothing about that.
Q. You don't know whether those lands have produced crops year after year, do you?
A. Some lots of that Bolton land wasn't broken up until a few years ago.
Q. How many years ago?
A. It ain't been long since it has been broken up.
Q. Whatever the case may be as to when it was broken up, that is not in the marsh land territory, which you have described?
A. No, sir, that is in the Bois de Sioux.
Q. Whereabouts does this marsh land territory of yours begin?

A. Begins near the outlet of—a little south—the banks of the river begin near the section line of 27.

Q. South or north?

A. South line of 27 where the banks begin.

Q. Do you know where the Hurdelbrink lands are, John C. Hurdelbrink?

A. I think he lives right here on the line that runs to Blackmer on Section 28, I think southwest of 28.

Q. Don't he own all of the south half of 28 except a fraction in the southeast corner?

A. No, I don't know how much land he does own.

Q. Are those lands, the south half of 28 in your marsh territory district?

3309 A. No, that is in the Bois de Sioux.

Q. Then the marsh territory must begin somewhere south of section 28?

A. 27 and 28, there.

Q. 28 is east?

A. West of 27.

Q. No, east of 28; section 27 is east of 28?

A. Yes, sir.

Q. Does your marsh territory begin below the south line of section 27?

A. It begins near that line.

Q. South of it?

A. It begins right in there, close up, there ain't much—the banks begin right near the line of 27.

Q. And your marsh territory that you speak of, the northerly line of it begins somewhere at a point about the south line of sections 27 and 28?

A. Yes, sir, in there, near there.

Q. And extends in what direction?

A. South.

Q. How far?

A. Clear to the south end of Lake Traverse.

Q. And extends clear down to Lake Traverse?

A. Yes, sir.

Q. And does that land then, beginning at a point on the south line of sections 27 and 28, on the west side of the Bois de Sioux river for a strip——

Q. There is some on the east side too.

A. That is in Minnesota, I am not talking about Minnesota. It is that territory lying on the west side of the Bois de Sioux

3310 river, a strip a mile and a half to two miles in width and from there south to Lake Traverse you designate as marsh territory?

A. Yes, sir.

Q. You don't call any of the lands lying above the sections 27 and 28 as marsh lands?

A. No, they are on the Sioux river.

Q. You know where a man by the name of Joseph Gajer lives?

A. Yes, sir.

Q. What lands does he own down there, do you know?
A. He lives on 4.
Q. He also owns the southwest——
A. That is where he used to live, 4.
Q. He also owns the southwest of 33, doesn't he?
A. Yes, sir, that is where he lives now.
Q. And section 4, where he used to live, is right next to the land of W. J. Taylor, isn't it?
A. Yes, sir.
Q. Right on east of it?
A. East of Taylor.
Q. Is Mr. Gajer's land, the southwest of 33 and his land in section 4, marsh land?
A. That land on 4 is always under water when there is any water in the Bois de Sioux or on the marsh, when there is water there it is under water.
Q. Always under water when there is water in the Bois de Sioux?
A. No, when the water goes over the banks of the Bois de Sioux it is on that land.

3311 Q. You mean to say, whenever the Bois de Sioux overflows the whole country there is water on that land?

A. Yes, sir.
Q. Do you know whether or not there has been crops produced on that land since 1895 up to 1915 every year?
A. No, I could not state about that but I am doubtful about him raising any crops.
Q. I asked you for your knowledge.
A. No, sir, I wasn't up there.
Q. Do you know anything about whether there has been any crops produced on the east half of section 5 any time since 1895 up to 1915?
A. What land is that?
Q. East half of section 5.
A. That is in east of Taylor's land, isn't it?
Q. That is west of Taylor's land. Taylor owns the east half of the east half of section 5; I am asking you about the west half of of the east half of section 5. Do you know whether there has been any crops produced on the west half of the east half of section 5 since 1895 up to 1915?
A. The way I understand it Taylor owns the west part of section 4 and the east half of the east half of section 5, that is what Taylor owns.
Q. That is, W. J. Taylor owns that?
A. Yes, sir, and this here other piece lies west of that?
Q. Yes, sir.
A. I haven't been on that land or near it since 1881.
Q. So far as you know then that land has produced crops?

A. I don't know anything about it, I don't know whether
3312 it has produced crops or not. I haven't been near it, any nearer than the road.

Q. Do you know whether the land of Mr. W. J. Taylor the gen-

tleman sitting right here, has produced crops every year from 1891 up to 1915?

A. Yes, sir, it has produced hay or grass, pasture.

Q. I mean cereal, grain crops.

A. The whole of it? The whole of Taylor's?

Q. Such a proportion as a man generally puts into crop in a piece of land that size, the land that he owns down there, the land you know all about?

A. I think Taylor raised crops on his land as far as I know.

Q. Every year?

A. Every year since it has been broken except what he testified the other day that some of it was grass and pasture.

Q. Now then if that land was flooded in 1915 and 1916, would you call that marsh land?

A. I don't call that marsh land, that land never stands under water, it always goes off as quick as a rain ends. That is high land that is on the outskirts of high water. I never knew that land to be overflowed only in 1881 and they say it was overflowed here in 1915 and 1916. That I don't know, but if 1881 is the only time I have ever known that land to be overflowed.

Q. If it was overflowed in 1915 and 1916 you don't know it?

A. No, sir, I don't know it.

Q. And if it was overflowed, would you call it marsh land?

A. No, I don't call that marsh land.

3313 Q. Yet that land lies a mile and a half south of where you say your marsh lands end?

A. Yes, sir.

Q. And it lies within one mile of the Bois de Sioux river too, doesn't it?

A. No, sir, it don't.

Q. Does it lie within a mile and a half of the Bois de Sioux?

A. Very near it.

Q. If it does lie within a mile and a half then it comes within the mile and a half strip you said a while ago was all marsh land?

A. No, sir, I consider Taylor's land one of the best pieces of land in Fairmount township.

Q. If the Gajer land, section 4——

A. If I was going to buy land today——

Q. I am not asking you for a stump speech, I don't want you to make one.

A. If you want me to answer that question——

Q. I didn't ask about that. If the Gajer land in section 4 has produced crops year after year prior to 1915 on substantially the whole of it—when I say crops I mean to include the pasture and hay land—would you say that that land was swamp or marsh land?

A. That land is every time of high water——

Q. Would you say it was swamp or marsh land?

A. I would say it was marsh land.

Q. Notwithstanding the fact that it produced a crop every year?

A. Yes, sir.

3314 Q. Now, Mr. Bruce, do you know where Burt Kurtz lives?

A. Yes, sir.

Q. Where does he live?

A. He lives down here on a piece of land, the northeast quarter of 33.

Q. Do you know the lands in the easterly part of section 33 known as the Swivel lands?

A. No, I don't know it under that name.

Q. Do you know that piece of land?

A. I know the old Miske farm.

Q. Is that marsh land?

A. I never knew the land to be anything but under water except along in the 90's, every year.

Q. If it has produced crops for years and years prior to 1915 would you still say it was marsh land?

A. That is nice land.

Q. Would you still say it was marsh land?

A. That is nice land, there is more water on that piece of land than most any piece of land in the slough, that is this end of the slough.

Q. You would say it was marsh land even if it produced crops year after year?

A. Yes, sir, because I have seen good grain grow right in the lake bottom.

Q. You have seen grain growing in the lake?

A. In the lake bottom.

Q. And saw it harvested?

A. And saw it harvested in the lake bottom.

Q. And seen it done year after year?

A. No, sir, I seen it only one time, went dry.

3315 Q. You have seen it when there was no water in the lake?

A. Yes, sir, there wasn't any water there. I have seen crops grow on the lowest lands between here and Lake Traverse.

Q. Do you know the northwest quarter of 20, 130, 47?

A. Yes, sir, there is a big slough.

Q. Do you know that land?

A. Yes, sir.

Q. Do you know the lands adjoining known as the northeast quarter of Section 19?

A. That is the old T. Williams tree claim. Yes, sir, I know that.

Q. Do you know whether that land was flooded in 1915 and 1916?

A. No, I don't know that that land was ever flooded. I know I went down by there in 1881, walked down there, down that road for quite a ways and it wasn't flooded then. I don't think that that ever was flooded, that is higher ground, hard ground.

Q. If that land was flooded in 1915 and 1916 and prior to 1915 it had produced good crops on it every year for a number of years would you say it was marsh land?

A. I am not a prophet, I couldn't prophesy on that.

Q. Can you answer the question. Read the question.

(Question is read by Reporter.)

A. If the land was covered with water long; if it wasn't covered with water and might have been so wet in 1915 and 1916 you couldn't cultivate it, same as mine was.

Q. Would you say it was marsh land?

A. No, that ain't marsh land, that is hard ground.

Q. That comes within your two mile and a half limit?

A. No, I don't claim it extended out to there.

3316 Q. Isn't every bit of it within a limit of two miles and a a half from the Bois de Sioux river, that land you are talking about in 18 and 17?

A. No, sir. There is part of 22, there is a strip of 22, Section 21, section 20, between—this whole section 20 and 21 and part of 22, between.

Q. Was your land up in Minnesota ever wet before since you owned it up to the year 1915?

A. No, sir, never was wet. There is a big draw through it and I always cut hay in that. Some years along 1895 I broke that and I let it go to grass again. I cut it twice this year in that draw and I got probably 4 ton of hay on it.

Q. Was never wet before, never wet before 1915?

A. No, never was wet before 1915 or 1916, it never was wet.

Q. Was anybody else's land around you ever wet before 1915 or 1916 that you know of?

A. Yes, sir, there was wet land east of me. There is a mile east of me there is a big quicksand slough.

Q. That is still in Minnesota?

A. Yes, sir, that is still in Minnesota. There was a piece in there, always springy and boggy and quicksand and the water stands there on top.

Q. I believe you stated concerning these marsh lands along the Bois de Sioux in North Dakota, that they were marshy and also alkali lands?

A. Yes, sir, there is lots of alkali lands.

Q. As I understand you, none of that marshy, alkali land lies north of the south line of 17; it all lies south?

A. No, there is more or less on the river down here and

3317 back.

Q. It all lies south of the south line of Section 17 this marshy alkali?

A. No, there is alkali lands scattered all over the country.

Q. I am talking about the lands in this territory along the Bois de Sioux, I am not asking you all over the country.

A. But you asked me if it only extended over that marsh land. I said no, it extends all over the country there is places of alkali. That is the nearest answer I can give you.

Q. Does all of it lie south of this line of Section 17?

A. No, sir.

Q. Along the territory you have described, along the Bois de Sioux, does it all lie south of the south line of Section 17? You

said awhile ago that all this marsh land lies south of the south line if Section 17?

A. No, not 17.

Q. 27 and 28?

A. 27 and 18.

Q. Does it all lie south of this line, this marshy alkali land, that is to say, all along this Bois de Sioux?

A. This alkali land is all over the country.

Q. Then there is alkali land also north of those lands along the Bois de Sioux?

A. There is alkali land upon mine higher up, 12 or 14 feet.

Q. And is it on all this land clear up north along the Bois de Sioux?

A. In places, it ain't all of it.

3318 Q. It ain't all alkali?

A. No, ain't all alkali land.

Q. What proportion of it is alkali land?

A. All that land on the marsh. I better tell you, so you will understand——

Q. Just answer the question; what proportion of it is alkali land?

A. I never figured that out, I never measured it, but I could tell you, if you will allow me, where the alkali land runs and what causes it.

Q. I don't want any information, I know what causes it.

A. You don't want to know that.

Q. I asked you where it lay and you don't know that?

A. Yes, sir, I do.

Q. Where is it?

A. Places all over this country that is alkali land, Richland county, Wilkin County, Traverse County, and all over this prairie land, those alkali spots, and if you will allow me to tell you I can tell you what causes it too.

Q. Mr. Bruce, I am asking you with respect to these lands lying on the west side of the Bois de Sioux river.

A. Yes, sir.

Q. The lands in North Dakota.

A. Then don't ask me if all the alkali land in Minnesota or North Dakota lies in that district, it doesn't.

Mr. Pinkney: Read the question.

(Question is read.)

A. You ask then, you want—in regard to that but don't go all over the country.

3319 Q. When I need instructions from you I will invite co-operation. Answer the question.

A. What is it you want?

Q. What I want you to tell me is this, whereabouts on this strip of land in North Dakota that you have described as marsh territory being from a mile and a half to two miles in width in the

State of North Dakota, does this alkali land that you have spoken of mainly exist?

A. It is all over there in different places, it is not in one body; it is in lots of different places, that alkali land is.

Q. Then as I understand you it is scattered all the way up the Bois de Sioux river?

A. Yes, sir.

Q. Clear up as far as Wahpeton?

A. Yes, sir, all over this western territory or prairie country more or less.

Q. Other people could see it as well as you?

A. Yes, sir.

Q. You are not the only man around here that knows alkali land, do you think?

A. No, sir.

Q. You say that this territory along the Bois de Sioux was never known as the Red River valley land?

A. No, sir, I never heard it called that until here yesterday in court.

Q. Is the fact that you never heard it called that the only knowledge you have that it isn't known and designated as Red river valley land? Just answer that question?

A. That is a bright question.

3320 Q. Then if it is bright you answer it so that it won't blind anybody.

A. Before I ever come to this country I knew more about this country than lots of people who have lived here the last 5 or 10 years. I am a great reader and I have read the advertisements of the Great Northern railroad——

Q. Will you please answer the question instead of making a stump speech?

A. I never heard it called the Red River of the North.

Q. Will you please answer the question?

A. That is the answer.

Q. No, that isn't an answer. Is the fact that you never heard it called the Red River valley of the North the only knowledge you have that it is not the Red River valley?

A. Yes,—I don't mean that, I mean, it is not the only reason. Anyway, it is not the Red River valley. The Red river valley is a continuation of the Otter Tail river and the Bois de Sioux.

Q. If the United States Geological Survey has designated this land along the Bois de Sioux from Lake Traverse up to the Red river where the Bois de Sioux empties into it as Red River valley lands, would you think that was good authority?

Mr. Palmer: That is objected to as a false statement.

A. I don't think it is called that.

Mr. Pinkney:

Q. Would you regard that as pretty good authority if it does so?

A. I never heard it called that.

Q. I say——

A. I don't call it that, no, unless I saw it right in a United States department.

3321 Q. You want to see it yourself before you believe that it was?

A. Yes, sir, I would like to see it.

Q. I am asking you to assume that it is true, would you regard it as evidence that it is known as Red River valley?

A. Yes, sir, if that is true.

Q. And you would think you were mistaken?

A. Yes, sir, probably I might be mistaken.

Q. Just the same as you may be mistaken about many other things you testified about?

A. I am not mistaken about many other things.

3322 CARL H. JOHNSON, being duly sworn in behalf of defendant, testified as follows.

Examined by Mr. Palmer:

Q. What is you- age?

A. 53.

Q. Where do you live?

A. Live half a mile east of White Rock.

Q. What is your business?

A. I have been farming 8 years ago, after that I was threshing and doing some other work during the summer time.

Q. You owned and operated a threshing machine the last eight years?

A. Yes, sir.

Q. And have you lived there east of White Rock during the past eight years?

A. Yes, sir.

Q. And prior to that time where did you live?

A. Lived in Richland county, North Dakota.

Q. In what township?

A. Fairmount township.

Q. On what section?

A. Section 33.

Q. What part of the section?

A. The southwest quarter.

Q. Is that in the part of Fairmount township known as Township 129, Range 47?

A. Yes, sir.

Q. Is that southwest quarter of 33, Township 129, Range 47, the land that is now owned and occupied by Mr. John E. Bruns who has testified here.

3323 A. Yes, sir.
Q. When did you first move upon that land?
A. 1890.
Q. And from what place did you come to the land?
A. I was here two years before that in this country.
Q. Where did you live during that two years before you went upon this land?
A. I was working here in Richland county one year and one year I worked on the east side in Minnesota.
Q. Working as a farm laborer?
A. Yes, sir.
Q. And prior to that 2 years where did you live?
A. In Goodhue county, Minnesota.
Q. That is some distance from this locality?
A. Yes, sir.
Q. Did you buy this land in section 33 in 1890?
A. Yes, sir, I did.
Q. Whom did you buy it from?
A. I bought it from a man named Knudsen.
Q. Where did he live?
A. He lived at the time in Kensington, Minnesota.
Q. What did you pay for the land?
A. I paid $1,200.
Q. $1,200 for the entire quarter?
A. Yes, sir.
Q. That is $7.50 an acre, Mr. Johnson, that is correct?
A. Yes, sir.
Q. How long had Mr. Knudsen owned it?
A. I don't know.
3324 Q. Had he ever lived upon the land?
A. No, I don't think so.
Q. Was there anyone living on it when you got it?
A. No, sir.
Q. Was there any buildings upon it when you got it?
A. No, there was a house that was standing on the line, between the two quarters and it was moved over.
Q. Moved over onto which quarter?
A. On the southwest quarter.
Q. Moved onto your quarter, was it?
A. Yes, sir.
Q. It was standing between the northwest and the southwest quarters of 33, you mean?
A. Yes, sir.
Q. And then you moved it over onto your quarter, did you?
A. I didn't move it over, it was moved over just before I moved, or just before I bought the place.
Q. Do you know anything about who homesteaded this land in 33?
A. I don't know.
Q. Was there any of it cultivated when you got it, plowed up?
A. 25 acres plowed.

Q. And was the rest in a wild state, in its wild state?
A. Yes, sir, it was.
Q. Was there any grove on the land?
A. No, sir.
Q. Or orchards?
A. No, sir, not anything.
3325 Q. Nothing of that kind?
A. No, sir.
Q. 25 acres broken up you say?
A. Yes, sir.
Q. And where was the breaking?
A. It is on the east side of the quarter.
Q. How far is this land from the village of White Rock?
A. Just two miles.
Q. And what direction is White Rock from it?
A. One mile north and one mile west.
Q. You mean the land is one mile north and one mile west from White Rock?
A. Yes, sir.
Q. Was the village of White Rock there when you bought the land?
A. Part of it was.
Q. Was it then about the same size as it is now?
A. No.
Q. There wasn't much but the station, was there?
A. There was no station there, no, sir.
Q. In 1890?
A. No.
Q. Was there a depot?
A. No, there wasn't.
Q. When was the depot put in?
A. I don't remember, I couldn't tell what year it was.
Q. A few years after you came there?
A. It was some years after I come there.
3326 Q. Were there stores at White Rock?
A. One store and a post office and a blacksmith shop.
Q. Did you place buildings upon the land?
A. Yes, sir.
Q. Did you break it up and cultivate it?
A. Yes, sir.
Q. How much of it did you cultivate?
A. It was all broke except 20 acres.
Q. You got it all broke except 20 acres?
A. Yes, sir.
Q. How long did you live on the land, Mr. Johnson, from 1890 on?
A. 19 years.
Q. That would be until 1909?
A. 1909 or 1910.
Q. Did you sell it before you moved off?
A. Yes, sir.

Q. How many years before you moved off of it?
A. I sold it one year before I moved.
Q. And you farmed it as a tenant, did you, after you sold it?
A. Yes, sir.
Q. You must have sold it along about 1908?
A. 1908 or 1909, I wouldn't say just when.
Q. What did you get for it?

Mr. Pinkney: Objected to as incompetent and immaterial.

A. I got $27.00 an acre.

Mr. Palmer:

Q. Was that its fair market value at that time?
A. I suppose it was.
3327 Q. It was all you could get for it, was it?
A. Yes, sir.
Q. Beginning with the years 1890 did you have crops upon this land, did you raise crops upon it?
A. Yes, sir.
Q. What kind of crops, as to whether they were good crops or poor crops?
A. Oh, it was different from one year to the other.
Q. What years did you raise the best crops?
A. As far as I—I had the best crop the first year I was there.
Q. And was that the year 1890 or 1891?
A. That was 1891, I think.
Q. And then 1892 and 3 and 4 and 5, did you have good crops?
A. No, 1892——
Q. Did you have a good crop in 1892?
A. Fairly good.
Q. 1893?
A. 1893 wasn't so good, it was a little dryer. 1894 it was an average crop.
Q. 1895?
A. 1895 was a good crop.
Q. 1896?
A. Well, I should say about an average crop for this country.
Q. Were those wet years or dry years?
A. By judging what it has been since I should think I would call them dry.
Q. 1897 what kind of a crop did you have?
3328 A. There was some crop, I wouldn't call is a good crop.
Q. What kind of a year was that, as to being wet or dry?
A. During the summer it wasn't so awful much wet, it was wet in the spring.
Q. Did you have water around you there in the spring?
A. Yes, sir, quite a lot of water all around there.
Q. Did the water come up on your land that spring?
A. No, it didn't come up——
Q. It didn't come up on the land?
A. Not on that quarter, no.

Q. Does that land lay higher than the surrounding land?
A. Yes, I think it is higher. It is a good deal higher than some of it, anyway.
Q. You say you had some crop in 1897?
A. Yes, sir.
Q. But not a very good one?
A. No, sir.
Q. And 1898, how was it; did you have a good crop or a poor crop?
A. I wouldn't call it a very good crop and not a very poor one, it was pretty fair.
Q. Beginning with 1898 on up to the time you sold it were the years wetter or dryer than the preceding years you had been there?
A. There was some years it was wet in between there, if I could remember the years.
Q. Those wet years, did you have good crops?
A. No.
Q. What was the reason?
3329 A. The reason was the land was kind of hollow and there is some low places in it, when it rains it doesn't drain off.
Q. What was your market place?
A. White Rock.
Q. In going to White Rock what course did you take, what road did you follow?
A. Since 1897 I didn't have no road, I couldn't go no roads.
Q. Why not?
A. Because there was no roads. Where I could go it was all water around, no roads open.
Q. From 1897 on?
A. From 1897 on.
Q. From 1897 on you say you had no roads, there was water around you?
A. Yes, sir.
Q. How did you go to White Rock?
A. Part of the time I went across the water in a boat and walked and sometimes I had to drive north. When I had to drive, I drove north so as to get out some place and then come south to White Rock.
Q. You would drive north and then go what direction?
A. Sometimes I would go west and when the water wasn't so high we could go east and go around down——
Q. On the Minnesota side?
A. No, between the river and my place.
Q. On what is called the meridian road on the west line of 34?
A. Yes, sir.
3330 Q. And other times you drove west?
A. I would drive north and then go west.
Q. And then go into White Rock from the west?
A. Yes, sir.
Q. You say you used a boat?
A. Yes, sir.

Q. From 1897 on?
A. More or less.
Q. What season of the year did you use the boat?
A. Some years we used it all summer, and some years we wouldn't have to use it all summer, we could get to town by going around.
Q. Some years you used the boat to do your shopping and marketing the entire summer?
A. Yes, sir.
Q. How many years did you use the boat all summer, do you say, from 1897 up to the time you left the land?
A. I don't remember more than one entire season that I used the boat all summer.
Q. What entire season was that?
A. I think it was 1907.
Q. Was it 1897 or 1907?
A. 1907, I think.
Q. Did you have a crop that year, 1907?
A. Part crop, yes, sir.
Q. Other years what season of the year did you use the boat?
A. In the fore part of the season mostly?
Q. In the springtime?
A. Yes, sir.
3331 Q. Whether or not you used the boat every spring to do your shopping and marketing?
A. From 1897 on we used it every spring.
Q. And when you sold the land did you sell the boat with it?
A. I did, not with the land, but I sold it on the sale.
Q. What were the conditions of the land around you there? Take the Erickson land that was just east of you; what shape was that in during those years from 1897 on?
A. Well, some parts of that piece of land is up high and some part of it is down low.
Q. About how much of it is low?
A. I don't know just how much.
Q. Half of it?
A. No, it ain't half of it, it is probably a small third of it that is low, I wouldn't say just how many acres.
Q. Did he use a boat too?
A. No, I don't think he ever had a boat.
Q. The land that lies east of that, the Cox land, owned now by a man by the name of Baker; do you call that land to mind?
A. Yes, sir.
Q. What shape was that in during the time you were there?
A. Not very good.
Q. Why not?
A. There was some water on it.
Q. Was there water on it during all the years from 1897 on?
A. Yes, sir.
Q. How much of it had water on?
3332 A. That piece is more than half of it that is affected by water.

Q And did it have water on it the greater part of the year?
A. Yes, sir, some parts of it was water on all the year.
Q. Did he have crops there?
A. Not where the water was.
Q. Did he have crops on the rest of it?
A. Yes, sir, some crops.
Q. Good or poor crops?
A. What you call good crops I never saw but once.
Q. When was that?
A. 1895.
Q. Who was running it?
A. Gustave Adolphson.
Q. Was he just a tenant or did he own the land?
A. He owned the land.
Q. When did he get rid of it; how long before you sold yours?
A. I think it was 1898.
Q. 1908?
A. 1908.
Q. Do you know what he got for it?
A. Yes, he got $25.00 an acre.
Q. In 1908?
A. Yes, sir.
Q. And you got $27.00, you say, for yours?
A. Yes, sir.
Q. Lundberg, was he troubled some with the water too?
3333 A. Yes, sir.
Q. In 34?
A. Yes, sir.
Q. How much.
A. Why, sometimes his quarter where he is living is pretty near all under water.
Q. Did he have crops?
A. Sometimes.
Q. And sometimes he had none?
A. Well, he has had some crops all the time but it has been more or less, sometimes he has not had very good and sometimes he hasn't had any.
Q. Was he troubled with water more than you were?
A. Yes, sir; that is, on the farm.
Q. Take that land that lies east of him there and right close to the river, marked here 1st National Bank of Breckenridge; what shape was that, was that ever cultivated or cropped?
A. Yes, sir.
Q. What years?
A. It has been cropped the same as the rest of it in there.
Q. What do you mean by that?
A. It has been troubled with water sometimes.
Q. It was cropped in dry years?
A. Yes, sir.
Q. Was anybody trying to live on that land?
A. I don't think anybody ever lived on that piece, no, sir.

Q. Now the land west of you there, the land in 32 marked August Larson; you call that land to mind?

3334 A. Yes.

Q. Has any of that ever been broken up?

A. Yes, it has been broken up.

Q. Where?

A. On the southeast quarter.

Q. How much?

A. Oh, I think about 45 acres.

Q. Is that all that ever has been broken on the section?

A. No, there is a little piece in the center of the section.

Q. How large a piece?

A. Near the south line that has been, I should think some 36 or 7 acres in there.

Q. Are there any buildings on that section?

A. Yes, there is now.

Q. Where?

A. In the southeast corner.

Q. When were those put on?

A. I don't remember what year, some of them was put on there four or five years ago.

Q. Did they raise crops on that land there, in 32?

A. Yes, sir.

Q. What kind of crops, good or poor?

A. About the average.

Q. Were they troubled with water on that section too?

A. Yes.

Q. How much of it, Mr. Johnson?

A. There has been times there when that was pretty near all under water.

Q. Since 1897?

A. Yes, sir, 1897 it was pretty near all covered with water.

3335 Q. 1915 and 1916, you remember those years?

A. Yes, sir.

Q. You were not living on this land then?

A. No, sir.

Q. Do you remember what land was flooded in there?

A. No, I wasn't in there in 1915 and 1916.

Q. You saw the water there?

A. Yes, sir.

Q. How did the conditions as to water there in 1916 compare with 1897, conditions there in 1897?

A. I wasn't in there in 1916 but from what I saw in White Rock in 1916 and what I saw in 1897 I will not say whether it was higher one year or the other. It was about the same those two years, I wouldn't say whether it was higher one year or the other.

Q. You think the conditions were about the same each year?

A. About the same.

Q. Something has been said about this road along the south line of section 33 and 34 on the state line. What kind of a road was there there when you lived on this land in 33?

A. There was no road there.
Q. There was no road there at all?
A. Not until—it has been attempted to make a road there, that is all, when I was there; just an attempt to make one.
Q. They attempted to make one?
A. Yes, sir.
Q. Did they make a success of it?
A. No.

3336 Q. Did you ever *made* any use of the road and could you when you were on the farm?
A. Yes, sir, I got over it some times.
Q. In what season could you use it?
A. Most of the time after it was froze up.
Q. Mr. Johnson, you say you sold this land in 1908 or 1909 for $27.00 an acre?
A. Yes, sir.
Q. What do you think was the fair market value of it before these floods came in 1915 and 1916?

Mr. Pinkney: That is objected to as incompetent and immaterial.

A. Why, I don't know what it would be worth.

Mr. Palmer:

Q. Do you know something about land values in there? You saw land bought and sold and know what they were being sold for?
A. Yes, I know what mine was being sold for.
Q. Do you know what others were being sold for, some of them?
A. Some.
Q. Was this land of yours worth any more in 1914, we will say, than it was when you sold it, in your opinion?
A. No, I don't think it was.
Q. Is it worth any more now than when you sold it?
A. No, sir.
Q. Is it worth just as much?
A. Why yes, I think so.

Cross-examination.

By Mr. Pinkney:

3337 Q. It was pretty badly flooded in 1915 and 1916, wasn't it, Mr. Johnson, according to your——
A. Yes, sir.
Q. You think the floods of 1915 and 1916 increased its value any or hurt its value?
A. No, I don't think it increased it any.
Q. You think it hurt if any?
A. I don't know.
Q. You saw more water on that land in 1915 and 1916 than you ever did before, since you have known it?
A. No, I wouldn't say I saw any more on it.

Q. When did you see as much on it, in 1897?
A. In 1897, yes, sir.
Q. Now, Mr. Johnson, that water that you saw on there in the year 1897, was the water that came from the spring break-up, was it not, the melting snows and falling rains during the break-up of the spring?
A. Yes, sir.
Q. When the river banks overflowed; that is where that water came from, wasn't it? Now, that water went off in a short time, a few weeks?
A. To a certain extent it did.
Q. The waters you saw there in 1915 and 1916, they didn't go off so quick, did they?
A. No, sir.
Q. In 1915, there were waters there from about the middle of June up until it froze up in the winter, weren't there?
A. Yes, sir, there was some water.
Q. And a large portion of the land down there was covered with water when the winter freeze-up came in the winter of 1915, isn't that true?
3338 A. Yes, sir.
Q. In 1916 the water stood on this land down in the vicinity there deeper and longer that it did in the year 1915, isn't that true?
A. I don't know.
Q. Now let's see; the waters came on this land down there in 1915 some time in June, didn't they?
A. Yes, sir.
Q. That wasn't from the spring break-up, was it, that year?
A. No.
Q. Now, in 1916, what time did you begin to notice them coming on your lands?
A. It came on in the spring again.
Q. In the spring break-up?
A. 1916, yes, sir.
Q. The waters from the spring break-up receded in a short time?
A. Somewhat, yes, sir.
Q. And then afterwards, in the early summer, didn't they commence to come up again in 1916?
A. Yes, sir.
Q. And they kept on coming up until along about the 1st of August?
A. Yes, sir.
Q. And covered the land down there pretty generally the entire season, didn't they, summer and fall of 1916?
A. They did.
Q. And then they began to recede a little or to some ex-
3339 tent, didn't they along about the middle of September, 1st of October?
A. Yes, sir.
Q. What other year since you have lived there have you ever

noticed the waters coming on these lands in the summer season as they did in the years 1915 and 1916?

A. In 1907. I think.

Q. In 1907?

A. Yes, sir.

Q. Or 1908, which was it?

A. It was 1907.

Q. What time in the year did it come on in 1907?

A. It came on in the spring.

Q. In the spring break-up?

A. But it rained all summer. We had water and rain all summer the water kept rising until about the 4th of July.

Q. Did it flood your lands down there?

A. It didn't flood my lands, no.

Q. Did it flood these other lands adjacent to you to the east of you?

A. Yes, sir.

Q. All of them?

A. Yes, sir.

Q. Did they produce any crops on the lands down there that year?

A. What wasn't covered with water was crops on.

Q. To what extent were these lands covered with water down there?

A. More or less, some of them got quite a lot of water and some didn't get so much.

Q. You say that was in the season of 1907?

3340 A. Yes, sir.

Q. And had you had quite a heavy snowfall the winter preceding?

A. Not any unusual in 1907.

Q. Nothing unusual and had no heavy rainfall in the spring?

A. Not in the spring but in the summer of 1907.

Q. I understood you to say that the waters came on in the spring of 1907?

A. They did.

Q. What were the weather conditions previously that caused the water to come up in the spring of 1907?

A. Well, it was snow and then when the snow went off——

Q. Pretty deep snow the winter before?

A. Not unusually deep.

Q. What do you call the usual depth?

A. Sometimes the snow is 5 or 6 feet deep, sometimes it is only 6 or 8 inches.

Q. What is your judgment as to the depth of snow you had that winter preceding the spring of 1907?

A. Oh, I wouldn't say just exactly.

Q. Do you think you had 3 or 4 feet?

A. No, sir.

Q. Would you say 2 feet?

A. Yes, sir, somewheres a foot and a half to two feet.

Q. When that melted and the rains fell, that is when that water began to come up on these lands?

A. Yes, sir.

Q. What was the condition of the river to the north, that is to say, was the snow and ice out of the channel or was it obstructed by the snow and ice?

3341 A. I wasn't up north so——

Q. Did you learn anything about it?

A. I couldn't say.

Q. You don't know whether you learned anything about it or not?

A. I don't suppose it was open all the way, no, sir; it hardly ever is opens south first.

Q. The river channel opens to the south first?

A. Yes, sir.

Q. And if it is obstructed with snow and ice in the winter time it has a tendency to dam the water back every time it opens?

A. To some extent, yes, sir.

Q. This river, as I understand it, flows from the south to the north?

A. Yes, sir.

Q. Your land that you owned in the southwest of 33 apparently lies between two arms of the Bois de Sioux river?

A. Yes, sir.

Q. One on the west and one on the east of it?

A. Yes, sir.

Q. It lies very close to one arm of the Bois de Sioux on the west, doesn't it?

A. Yes, sir.

Q. Where does the Bois de Sioux receive its water supply from the south, from what point?

A. Lake Traverse, I suppose.

Q. Lake Traverse, the outlet of the lake, Lake Traverse, is in the Bois de Sioux, isn't it, it is through the Bois de Sioux?

A. I suppose so.

3342 Q. That is the same river your land lies between in 33, isn't it?

A. Yes, sir.

Q. Do you know what the condition of Lake Traverse was in this year when you had this flood down there in 1907?

A. It must have been a lot of water in it or it wouldn't run out.

Q. It was the overflow of Lake Traverse that flooded your land, is that your judgment?

A. In the spring it was.

Q. And it continued to remain high the balance of that season in Lake Traverse?

A. No.

Q. Did you inquire about that?

A. It went down some after the first.

Q. After the spring break-up?

A. After the first spring break-up, went down some and begin to rain and came up again in the summer time.

Q. You mean the lake?

A. Yes, sir, and the water in the river.
Q. And the overflow of the river is what flooded your land?
A. Yes, sir, I suppose so.
Q. Now, Mr. Johnson, as I understand you, you went down on this piece of land in 1890, is that right?
A. Yes, sir.
Q. And you lived there for 19 years?
A. Yes, sir.
Q. In the 19 years that you lived there on that piece of land, how many years was your land flooded so that you couldn't produce and didn't produce crops there?
3343 A. It wasn't flooded.
Q. And you produced crops on it every year?
A. More or less, yes, sir.
Q. Now, I mean when I inquire, I say that in those 19 years time the flood conditions did not prevent you from producing crops on your land, did they, the southwest of 33?
A. No, not the flood conditions.
Q. You sold it, as I understand, in 1909?
A. Yes, sir.
Q. And did you buy a farm somewheres else?
A. No.
Q. Did you engage in some other business? After you sold your farm down here in 1909?
A. Not any more than I was before.
Q. You were farming up to 1909, wasn't you?
A. Yes, sir, but then I haven't been farming since.
Q. You went into some other business after you sold out your farm in 1909?
A. Yes, sir.
Q. What business did you engage in?
A. I run a threshing machine in the fall.
Q. You have run a threshing machine in the fall?
A. Yes, sir.
Q. And have you done it ever since?
A. Yes, sir, I have done that while I was on the farm too.
Q. Are you pretty well acquainted with these lands lying on the North Dakota side in North Dakota from the State line north up as far as this place?
A. Partly, I think I have seen all of them.
Q. You haven't any more than just a visual acquaintance
3344 with them?
A. That is all.
Q. What year was it when you used to go from this farm in a boat and to make your visits to town in a boat, what year was that?
A. It was 1907.
Q. As I understand it, you used a boat to go from your home place, your farm in the southwest of 33 up to your trading point which was White Rock?
A. Yes, sir.
Q. And you used the boat the whole season for that purpose?

A. In 1897, I did, yes, sir,—no, in 1907.
Q. Did you use the boat in 1897 for the same purpose?
A. Yes, sir.
Q. Then you commenced using a boat so as to get to market about 5 years after you bought the place, after you moved onto it, didn't you, 6 years; that is true, isn't it?
A. Yes, sir.
Q. And you stuck to it for about 12 or 13 years longer?
A. More or less, yes, sir, I don't say I used it all the time.
Q. You didn't use it every season?
A. Not all the time but I used it some of the time every year.
Q. When sometimes you used it every year wasn't it generally when the spring break-up was on?
A. Most of the time I used it in the spring of the year.
3345 Q. And after the spring freshets had gone you didn't have any occasion to use it until they came again?
A. No.

Redirect examination.

By Mr. Palmer:

Q. Mr. Johnson, you know S. E. Oscarson, who has testified here?
A. Yes, sir, I know Oscarson.
Q. Did he buy this land from you?
A. No, he did not.
Q. Now, did he or did he not, just before you sold out, say to you that you had better sell that land and get out of there because you never would be able to make a living on it, or words to that effect?
A. Yes, sir, he did.

Recross examination.

By Mr. Pinkney:

Q. Who said that to you?
A. Mr. Oscarson at White Rock.
Q. You didn't believe him, did you? You stuck to it for years after he gave you that advice?
A. I did.
Q. Now, I want to ask you a little more about this boat business. Did you use that boat on these occasions you have spoken of, to go clear to White Rock, did you use if from your place all the way to White Rock?
A. Sometimes I did.
3346 Q. When you did not use it all the way to White Rock how far did you use it?
A. Just half a mile south of my place.
Q. You used it just to get across that pond down there, didn't you?

A. Yes, sir.
Q. When you got across the pond you got out of the boat and went afoot, did you?
A. I did.

Redirect examination.

By Mr. Palmer:

Q. At the times that you used the boat did you sometimes go clear to White Rock?
A. Yes, sir.
Q. And tie the boat at the store?
A. There was one time I did that.

3347 PAUL T. CAMMEURD, being sworn as a witness in behalf of defendant, testified as follows.

Examined by Mr. Palmer:

Q. How old a man are you?
A. I am pretty near 73.
Q. Where do you live?
A. Live at White Rock.
Q. How long have you lived there?
A. Lived there since 1885, in April, 1885.
Q. Have you lived all the time in the town of White Rock?
A. No, I lived out on a farm.
Q. What is the description of the farm on which you lived?
A. It is the southeast and the northwest of Section 4, Township 128, Range 47, White Rock township.
Q. On which of these quarter sections did you live?
A. On the southeast.
Q. What part of that quarter did you live on?
A. When I first built I built kind of on the west side and then, later on, about 1900, I moved it onto the east side again near town.
Q. The northwest of Section 4, did you have any building on it?
A. No, sir, I never had any buildings on it. I took that as a tree claim.
Q. And the southeast you took as a homestead?
A. A pre-emption.
Q. Does the northwest quarter run up to the state line?
A. Yes, sir.
3348 Q. The south line of North Dakota?
A. Yes, sir; joins Mr. Johnson right on the south.
Q. It adjoins this section 33, township 129, Range 47, that has just been testified about Mr. Johnson?
A. Yes, sir.
Q. What year did you come upon this land?
A. I think I built on it, I moved out on the pre-emption in the year after I come there, about 1886.
Q. And you came to the country in 1885?

A. Yes, sir, I stayed in town about a year, I guess.
Q. In the town of White Rock?
A. Yes, sir. Well, it really wasn't no town then, there was nothing but the railroad.
Q. Have a store?
A. Well, there was a little shanty store on the Minnesota side but not on the Dakota side.
Q. Have you lived continuously there, either on this land or right in White Rock ever since 1885?
A. Yes, sir.
Q. When did you dispose of this land of yours?
A. I sold it in 1909, one quarter, and the other one I sold about two years later.
Q. Which one did you sell in 1909?
A. That is the southeast.
Q. That is the one that adjoins the town of White Rock?
A. Yes, sir.
Q. It adjoins the platted portion?
A. Yes, sir.
Q. You sold that in 1909?
A. I think so.
Q. What did you sell it for?
A. $35.00 an acre.
3349 Q. Was that about its fair market value at that time?
A. Well, that is about as much as I could get for it. I got so old I didn't want to farm any longer so I had to sell it.
Q. Now the northwest quarter, you sold that in 1911?
A. Either 1910 or 1911, I don't remember.
Q. What did you get for it?
A. Same price.
Q. $35.00 an acre?
A. Yes, sir.
Q. Did this southeast quarter of yours have pretty fair improvements on it?
A. Yes, sir.
Q. You recall the floods of 1915 and 1916 in that locality?
A. I lived in White Rock.
Q. What would you say was the fair market value of this land before those floods, before 1915 and 1916, before the floods?
A. Well, I don't know. I sold it cheap, of course. The fellow that bought it he kind of told he was offered $50.00 an acre, I couldn't say, he didn't want to take it.
Q. Do you think the land is worth as much now as it was before those floods?
A. It is a hard thing to say, it ain't worth it to me.
Q. Is it worth now, in your opinion, as much as it was when you sold it?
A. Yes, sir, it is worth that much and maybe more.
Q. It is a pretty good quarter for stock and hay and pasture, and

that is a pretty good paying proposition now during these
3350 hard times.

Q. Is that true of both quarters, that they were best adapted for hay and stock and pasture?

A. Especially the southeast. The northwest was more for grain, that was pretty near all in crop.

Q. Now, what were the conditions there on your land with respect to water and floods from 1885 on?

A. From 1885 up, well, there was a little water in the spring, it didn't bother me any from raising a pretty fair crop until up to 1897.

Q. Until up to 1897?

A. Then there was an awful snowy winter and a big flood; well, even in 1897 I had a pretty fair crop too.

Q. How high did the flood get in 1897?

A. Well, you see——

Q. Was it as high as 1916?

A. Well, about the same. I have been trying to figure it on some landmark; it is hard to tell. I kind of figure it the same, it might have been higher, 3 or 4 inches, so little difference I couldn't say.

Q. And about how long in the season of 1897 did those flood conditions continue there?

A. Well, it commenced a pretty warm spring and a little rain and took the snow off and the flood went off quite lively, it didn't stay on very long.

Q. How was the land through the summer as to being wet?

A. No, it was pretty fairly dry.

Q. You had a fair crop?

A. Pretty fair. I had to raise some of the late crops, what
3351 they call barley and flax. I didn't put in very much oats because it was wet and when the water went off I went on seeding.

Q. Does your land lie fairly high?

A. Yes, the northwest quarter is fairly high. It overflowed just a little in the southeast quarter in that little run.

Q. That floods over some?

A. Yes, sir.

Q. Your southeast quarter did that flood some?

A. Yes, sir, the north half of that was quite bad for flooding, the far north half of that; the south half of that hasn't been flooded any that I know of.

Q. How did the quarter right north of it—how about the northeast quarter of the section?

A. Oh, that is pretty near all water.

Q. Most of the time?

A. You notice that map that the creek *does* through the southeast and the northeast of that section so I had my pick. I took the two best quarters. Both of them quarters is almost worthless, not worth much of anything.

Q. That is, that northeast quarter and the southwest quarter are practically worthless?

A. Yes, sir, they ain't much worth. They call them worth a whole lot, you can't buy them for less than $50.00, I wouldn't give that for them. They are about all swamp land. In a dry season, of course, pretty good hay.

Q. But they are all swamp?

A. Yes, sir.

Q. Mr. Cammeurds, I wish you would call to mind the
3352 year 1887, that is, two years after you came there, 1887 and 1888; call those years to mind.

A. Them years was fairly dry. I raised good crop. I had about as good a crop as I ever had.

Q. In 1887 and 1888?

A. Yes, sir.

Q. You came on the land you say in 1885?

A. Yes, sir, in 1886 about two years after I had very fine crops, the first two or three years.

Q. Were there any flood conditions there in those years?

A. There was no flooded condition there then.

Q. Was there some on the surrounding lands?

A. No, not hardly around there, only them little streaks of river where the water runs there, there was water in there.

Q. They were full?

A. Yes, sir, they were full but on the surrounding lands it wasn't very much.

Q. Call to mind the land north of you there, Mr. Johnson's in 33, of Fairmount township, and Mr. Erickson's on this what is called the Baker land?

A. The Baker land is an awful poor quarter.

Q. That is the east half of the west half of 33?

A. Yes, sir.

Q. Why do you say that is an awful poor quarter?

A. It is right in the corner there on the state line south of the house there, it is right in the river bed and it is low swamp, really slough.

Q. Most all of it water?

A. No, just—then there is a kind of water runs through there, through the middle of it.

3353 Q. Who settled on this quarter, who built those buildings there?

A. Adolphson.

Q. How did he get along?

A. Well, the old man got along kind of nicely. He sold the place and had a little money left.

Q. What did he sell it for, do you remember?

A. I think about $25.00 and acre?

Q. Whom did he sell it to?

A. Sold it to some Fairmount bank, I guess.

Q. Mr. Lundberg, how was his quarter in 34?

A. Well, it is a pretty good quarter in dry years but more or less subject to overflow.

Q. On his home quarter?

A. Yes, sir.
Q. His eighty that lies north, is that better land?
A. Yes, sir, that is a little higher eighty, a high knoll there.
Q. Is there considerable rock on that land?
A. There was some rock in the middle. I don't know whether I picked them all out or not.
Q. Take those lands of Lundberg and Johnson and Ericks and Adolphson and over in Section 32 marked August Lars here——
A. August Larson, that is west of Johnson's place?
Q. Yes.
A. Well, that is an awful poor section of Larson's.
Q. Section 32?
A. Yes, sir, that is all slough, pretty near.
Q. Has it always been?
3354 A. Yes, sir. Well there was some, we had some awful d years there wasn't water anywheres, of course, then they w dry but there was nothing but long bog grass there all the time.
Q. Has that land ever been valuable for farming purposes?
A. Not to me.
Q. Would it be to anybody who wanted to farm?
A. No, I don't think so. John Chilson had a quarter in th some time and Burch had some on the west side and somebody hold of the whole section then.
Q. How did Chilson get along?
A. Oh, he didn't get along at all, pretty wet.
Q. Troubled with water a good deal on his land?
A. Yes, sir.
Q. Who was on that land right north of Johnson's land th northeast of 33?
A. That is the Chilson place.
Q. Was that another Chilson?
A. That was Jim Chilson.
Q. How did he get along?
A. That quarter wasn't so bad. Part of that quarter is pr high, but he didn't get along very well. Whenever he had a cha he would mortgage his place and then his house and barn burned and he had nothing to live on and he left.
Q. Was he bothered with water some on his land?
A. I think bothered some on the west side.
Q. Erickson's what kind of land was that?
A. His land is pretty good. That is almost like Johnson's, river never goes up in there. That is a little bit of a kind of low w run from the river from the south way up in the pasture
3355 clear up to his barn and into the field but it is what we a narrow run. His quarter ain't been flooded very bad I know of. He always had a good crop, in fact.
Q. Is all of that land through there more or less rocky and sto
A. Yes, sir; I dug rocks on that land until I am lame in the l yet and then I wouldn't get them all out.
Q. And all those places north of you, big rocks?

A. Well, when you get up to Chilson and up about a mile north there ain't so many rocks but you go further south you get more and more of them.

Q. Lundberg, did he have some?

A. Yes, sir, he had quite a few.

Q. Now you know that land north and east of Lundberg's Section 34, that Swanson land?

A. Right north of Lundberg's.

Q. Yes, and east of his eighty, in there next to the river.

A. That is Swanson.

Q. Yes.

A. Well, I guess he never raised anything hardly. Well, in them dry years they had a pretty good crop.

Q. But ordinarily did he raise crops there?

A. Not very many years.

Q. What was the matter with his land?

A. It was flooded, water bothered him.

Q. Now, how about that land east of Lundberg's home place?

A. Well, that is a kind of—that is a pretty nice piece of land in dry seasons, but it lays close to a big marshy swamp in there
3356 and it kind of raises a little from the swamp back. There has been crops quite a few years; every once in a while flooded so it would go back. Swanson used to rent it a good deal.

Q. Was that land of any commercial value for farming purposes?

A. Yes, sir, they have been getting crops on it quite a good many years, a good many years they haven't had any at all.

Q. Buildings ever put on it?

A. No, only a little bit of a claim shanty about 8 x 10, something like that fellow had to prove up as a pre-emption.

Q. Do you know that Butts to the north there, north of Erickson's and Chilson's up in there?

A. Well, I have been through there.

Q. Where the school house is on 28?

A. Yes, sir, I know it.

Q. What kind of land is that?

A. Well, that is quite a little bit from the Bois de Sioux too, but, well, of course, there is parts of that on the east side and parts on the west side of the railroad, ain't it down on the railroad?

Q. Yes, that is right.

A. Well, the piece west of the railroad ain't so bad. It was farmed quite a good deal, in the olden days but on the east side was pretty wet.

Q. All the time practically?

A. No, not all the time. These dry years we had we raised crops anywhere.

Q. In the dry years they had some crops?

A. Yes, sir.

Q. How was it in the wet years?

A. Gone back, didn't plow it.

3357 Q. Up in 21, the Otto Anderson land and the Ole Juleen land?

A. Well, that land has been cropped little by little sometimes and then they have been flooded with water more or less.

Q. Cropped off and on?

A. Yes, sir.

Q. Do you know Quidding's up there?

A. Yes, sir.

Q. How was his land for crops?

A. That land is about all the same, about like this table, you couldn't tell one from the other.

Q. How about the crops on the Quidding land, did they have crops there sometimes?

A. Yes, sir, I think he had crops there some years.

Q. Dry years?

A. Those dry years they had a nice crop there.

Q. How about the wet years?

A. Then they were cut out entirely.

Q. Did you know about Johnson using a boat to go to town?

A. Yes, sir.

Q. In the spring?

A. Oh, yes.

Q. Quite frequently?

A. Yes, sir.

Q. How many springs would you say that you had to use a boat?

A. Well, I didn't see that it was more than one spring that he really had, but of course he had a boat there and you

3358 know water transportation is cheaper than on land, don't you know that? So he went across there for fun or for anything else; there wouldn't have been any need only that year, that spring.

Q. Could he go clear to the store at White Rock with his boat?

A. Yes, sir, the railroad washed out north of town a little bit in 1897, the railroad track washed out for thirty feet.

Q. In 1897, the railroad grade washed out?

A. Yes, sir. There was a week or two there we didn't have no trains at all.

Q. That was in 1897?

A. 1897, yes sir.

Q. How has that road been along on the state line?

A. Well, that is in ordinary dry seasons it ain't bad. They have—working on it and grading it up quite a bit, especially from White Rock about a mile to the state line. Lundberg graded up a little in front of his place.

Q. You mean west of his place?

A. Yes, sir, west of his place.

Q. How was the road running east and west on the state line?

A. Never hardly been any road there. Johnson tried to put in a road there. Herman put in a little bridge but I think it was in 1897 the whole thing washed away, the bridge and the grade and the whole thing, and made a great big gash in there in the grade

so the water had plenty of chance to go, over. Then it was left until this year, I guess they were trying to fix it up again. From what I understand they got $300 from the county and put in cul-
3359 verts in there and graded up a lot of it. I passed over that grade some in dry years but it wasn't graded up to speak of.

Cross-examination.

By Mr. Pinkney:

Q. I understand you went on this piece of land of yours in 1886?
A. Yes, sir.
Q. And you continued to live on it up until what time?
A. Until 1904.
Q. About 20 years?
A. Just about that.
Q. You farmed it all the time you were there?
A. Yes, sir.
Q. You had a half section?
A. Yes, sir.
Q. You generally raised pretty good crops on it every year?
A. I might say I never figured on them big crops they have been speaking of in this country. I had a pretty fair crop. From 10 to 15 bushels to the acre and 30 to 35 bushels of oats.
Q. And Barley?
A. 10 to 15 of barley, one season I had from 30 to 35 bushels.
Q. And did you raise any corn down there?
A. No, sir, corn was out of the question in the early years. Now they started to raise corn again.
Q. They raise corn down there now?
A. They are trying to.
Q. The trouble, as I understand it, with the high water
3360 there was generally the high waters that came in the spring break-ups?
A. Yes, sir.
Q. That is the waters you had the trouble with, wasn't it?
A. Yes, sir.
Q. And this occurred generally when the winter snows were melting and the spring rains fell?
A. Yes, sir.
Q. Those waters, when they went onto your lands, they only stayed a few days, didn't they, a week or ten days, something like that?
A. That was about all.
Q. And those flood conditions didn't prevent you from putting in your crops that season and harvesting them?
A. No, sir, even in 1897——
Q. Even in 1897, you say you had a pretty good crop?
A. Yes, sir, pretty fair.
Q. And that was one of the heaviest flood years you can recollect?
A. Yes, sir.

Q. And those were the flood waters resulting from the spring breakup?

A. Yes, sir. I want to state that was the biggest snow fall in the winter I ever saw that winter.

Q. You had a very heavy snow fall the preceding winter?

A. Yes, sir.

Q. How deep was that snow fall that winter?

A. Between the house and the barn on the farm a bank about 15 feet high.

3361 Q. What was it on the level?

A. I couldn't find any level, it was all drifted.

Q. You had three of four feet of snow on the level?

A. I think so.

Q. And that went off in the spring break-up of 1897?

A. Yes, sir.

Q. You had floods there in 1915 and 1916?

A. Yes, sir.

Q. The floods came on in 1915 and 1916, about what time of the year?

A. In June.

Q. That wasn't from the spring break-up?

A. No, sir.

Q. You had your spring break-up before that?

A. Yes, sir.

Q. Those waters that came in 1915, stayed until the summer and fall?

A. I was in White Rock at that time, I had a garden there and I couldn't raise anything.

Q. You didn't see your garden, did you?

A. No, sir.

Q. It was all covered with water when the winter freeze-up in the fall of 1915, came?

A. Pretty much.

Q. In 1916, when did the flood waters come on you, then that year?

A. It come on about the usual time, had quite a big raise in the river there, in the spring when the snow went off.

Q. That was the spring break-up?

A. That was the spring break-up.

3362 Q. Then it went down?

A. They they commenced to put planks on the side walk in White Rock and in a few days it went down and went down a week or ten days.

Q. Practically went off the land?

A. Went off back into the river when the river got lower, and the June rains come and then it was worse than ever.

Q. In June they commenced to come up again?

A. Yes, sir, worse than——

Q. Worse than you ever saw?

A. Worse than I ever saw?

Q. And they stayed on the entire season?

A. Stayed on all summer.
Q. Summer and fall and winter too?
A. Yes, sir, until 1917.
Q. You never saw flood waters stay on land like you did in 1915 and 1916?
A. No, sir.
Q. Of course, you couldn't produce any crops on your land those two years or were there crops produced down there?
A. I don't know.
Q. Do you know whether they produced any crops on these lands down there where you used to live?
A. I kind of think that out on that tree claim, it was a nice piece of land——
Q. I just asked you if they produced crops there?
A. They had some crops there in 1915.
Q. I am talking about 1916? That you know of?
A. No, not that I know of.
Q. Land was covered through the entire season?
A. Yes, sir.

3363 Q. You sold this farm of yours in 1911, did you?
A. Yes, sir, I think it was 1910 or 1911.

Q. That is, you sold the northwest quarter in 1911, and you sold the southeast quarter in 1909?
A. Yes, sir.
Q. The southeast quarter in 1909, you sold for $35.00 an acre and the northwest quarter you sold in 1911 for the same price?
A. Yes, sir.
Q. Whom did you sell to?
A. To Otto Reddy.
Q. He is a son-in-law of yours?
A. Yes, sir.
Q. Then you sold it into the family?
A. Yes, sir, but I sold it for all it was worth.

3364 ANDERSON C. HIATT, being duly sworn in behalf of defendant, testified as follows:

Examined by Mr. Palmer:

Q. How old a man are you?
A. 56.
Q. Where do you live?
A. I live in the village of Wheaton.
Q. In Wheaton?
A. I live inside of the corporation line.
Q. Traverse County, Minnesota?
A. Yes, sir.
Q. What is your occupation?
A. Farming.
Q. How long have you been a farmer?
A. I have been a farmer all of my life since I was old enough.
Q. How long have you lived at your present place of residence?

A. About three months.
Q. Prior to that time where did you live?
A. I lived about eight miles southeast of here.
Q. In what county?
A. Traverse County, Minnesota?
Q. In what township?
A. Taylor township.
Q. Which part of Taylor township, east Taylor or west Taylor?
A. I guess it would be east Taylor.
Q. What section?
3365 A. Section 7 on the old Leman place.
Q. How long did you live there?
A. I lived there ten years.
Q. You must have come there then about the year 1907?
A. I believe it will be eleven years New Year's when I moved there, next New Year's it will be eleven years.
Q. Did you carry on a farm at that point?
A. Yes, sir.
Q. During all the time you lived there?
A. Yes, sir.
Q. Did you rent it or own it?
A. I rented there.
Q. Did you own some land in that township?
A. I did, a short time.
Q. What land was that?
A. It was in section 5, 240 acres.
Q. Were you at one time the owner of the land in Fairmount township described as the east half of the southwest quarter and the west half of the southeast quarter of section 9, 129, 47?
A. Yes, sir.
Q. When did you acquire that land?
A. I think it was in 1910.
Q. Did you know the land prior to that time?
A. No, I did not.
Q. What part of 1910 did you acquire it, in the spring or in the fall?
A. I think it was just about the first of September just after harvest.
Q. Did you have the crop or returns from it that year?
3366 A. No.
Q. From whom did you acquire the land?
A. A fellow by the name of Dick Vogue, Aplington, Iowa.
Q. How long had Mr. Vogue had the land?
A. He hadn't had it at all. He just was on a trade for it when he came up here and he got me to go out and look at it and traded it to me and went back and finished his trade.
Q. Do you know the fellow from whom he acquired it?
A. No, I don't know his name, he was a banker in Aplington.
Q. Do you know how long he had it?
A. No, sir.
Q. What did you pay for it?
A. $25.00 an acre.

Q. In what, cash?

A. I traded a span of ponies for $200 and a span of geldings for $250 and made a $250 and $700 payment.

Q. How did you pay the rest of it?

A. There was, of course, a mortgage on the land, six per cent interest for five years.

Q. How long did you keep the land?

A. I think I kept the land three years. I had three crops off of it, might be four years I kept it.

Q. 1911, 1912 and 1913?

A. Yes, sir.

Q. Were there any buildings upon this land?

A. No, there were no buildings on it?

Q. Any improvements of any kind?

A. Nothing at all, just prairie or raw land.

3367 Q. There was no cultivated land upon it then?

A. No, sir.

Q. Nor fences of any kind?

A. No, sir.

Q. What use did you make of it?

A. I have sold the hay off of it and put it up, what I wanted myself and the rest we sold.

Q. About how many acres did you cut for hay yourself, during those years?

A. I cut on an average of about 40 acres.

Q. And the balance you rented?

A. Yes, sir, I rented it.

Q. Sold the hay?

A. Sold it in the field by the acre.

Q. What did you get for it?

A. I got two dollars an acre the first year, $2.25 the second year and $2.50 the third year.

Q. Per acre?

A. Yes, sir.

Q. Could the land all be used for hay?

A. Yes, sir.

Q. What character of hay?

A. Well, next to the east side was pretty low, it was high course hay and then there is, as it run west, it got better, it got higher on the west side. On the west side about 80 acres you got pretty good blue stem hay.

Q. Is that mid-land or up-land hay?

A. It is mid-land hay. I suppose it would be between the two. There would be the coarse hay and the mid-land hay and the up-land hay.

3368 Q. Could it all be cut?

A. Yes, sir, it could those years I had it.

Q. Were those wet years or dry years?

A. They were dry years.

Q. 1911 and 1912 what was the state of the Bois de Sioux river?

A. The first year I think it was entirely dry or just about so.

Q. 1911?

A. Yes, sir, first year, 1911, and then the second year I know we crossed it and other people that put up hay on the same land went through. Our horses were up to their bodies in the water, quite a little water in the Bois de Sioux, but we went through the water to get our hay, and to haul the hay we had to go around the Blackmer bridge and hauled some of it.

Q. Were you troubled with overflow of this land?

A. I never was while I owned it.

Q. When did you sell it?

A. Well, I think it was in 1910, I think——

Q. When did you sell it, the land?

A. Well, it would be about 1914, I guess; four years, three or four years after I got it.

Q. Whom did you sell it to?

A. I sold it to Powell in White Rock.

Q. The witness, Newell N. Powell, who has testified here?

A. Yes, sir.

Q. I think his statement was that he got it in December, 1913.

A. Well, probably, that is what it was.

3369 Q. What did you get for the land?

A. I traded it to him for another quarter. I valued my land at $35.00 and he valued his at $30.00. He gave me $800 to boot, $5.00 an acre.

Q. You are talking about your land in section 9?

A. Yes, sir.

Q. You valued this land in section 9 at $35.00?

A. Yes, sir.

Q. And he valued his at $30.00 per acre?

A. Yes, sir.

Q. Where was his land?

A. His land was just two miles west of Barnesville, Clay County, Minnesota.

Q. What was the character of that land?

A. There was 30 acres broken and a part of a little barn on it, the rest of it was in prairie.

Q. Did you try to crop any of it?

A. Yes, sir.

Q. What shape was it in?

A. It was in bad shape. He had started to dig rock and they hadn't been carried off and I hauled the rocks off and sowed it to flax. It come on wet years and didn't get any flax, not a nickel's worth of it.

Q. What was the character of the soil?

A. It was quicksand underneath.

Q. Never got any returns from that whatever?

A. No, sir.

Q. Lost the seed you put in?

A. Yes, sir, lost the seed and time of getting off the rock and breaking on it and everything.

3370 Q. And how long did you keep that land?

A. I kept that, I guess, about 3 years. I rented it one year. I traded it to Ed Erickson in White Rock.

Q. What for?
A. Ten town lots in the town of Victor, South Dakota.
Q. That is a small, new town on a new railroad?
A. Yes, sir.
Q. Did you make inquiry before you got this land to learn whether it was overflow land, this land in section 9 of Fairmount township?
A. No, sir, I never did. I never inquired anything about it. I made the trade quick and all at once.
Q. Did you inquire about it afterwards?
A. Yes, sir, I inquired about it afterwards.
Q. Did you learn that it was land subject to overflow?
A. Well, yes, they told me it was.

Mr. Pinkney: We object to that as incompetent and immaterial.

Mr. Palmer:

Q. Was that the reason you disposed of it the way you did?

Mr. Pinkney: Objected to as incompetent and immaterial.

A. Yes, sir, that is the reason I disposed of it.

Mr. Palmer:

Q. Did you know about Powell breaking the land up, or having somebody do the breaking?
A. Yes, sir, I know he broke out some of it, a little of it, the next year.
Q. In 1914?
A. Yes, sir.
3370½ Q. I think he testified to something like 36 acres?
A. Might be something like 30 or 35 acres.
Q. Did you get the hay on this land in 1914?
A. Yes, sir, I think I got 40 acres of Powell.
Q. Did you observe the condition and quality of this flax he had on there?
A. Yes, sir, I seen it. It didn't look very good to me. It was just broken strips. We crossed it and bucked hay across the strips of flax; it didn't look to amount to anything to me.
Q. In 1915 did you see it?
A. No, I did not; I wasn't over there in 1915.
Q. Did you make any attempt to break it, any of the land, while you had it?
A. No, sir.
Q. Why not?
A. I didn't want to break it up; I thought it was a paying proposition the way it was.
Q. For hay?
A. Yes, sir.
Q. What would you say about this land being suitable for agricultural purposes, that is, for breaking out and cultivating?
A. I don't think it would be very good.

Q. Why?

A. Well, because I see land adjoining it on the west and on the north grow up to weeds. Put into crop it wasn't successful, it didn't make nothing but when other crops was good on other lands they was awful short and didn't look good.

Q. The land north of that is land that has been called
3371 the Crothers' land?

A. I think Rydell owns it now, Crothers did own it.

Q. Did he have some crop on that in the year——

A. Yes, sir, he had crops on that the year I owned my land. We used to be up there quite often to water our horses.

Q. Was it Rydell or Crothers?

A. That was Joe Crothers.

Q. What kind of crops did Joe Crothers have on there?

A. I never thought he had much of a crop.

Q. What was the matter with the land?

A. I don't know it didn't seem to be anything to amount to anything.

Q. And the land over between your land and the river, seems to be some government land in there, Mr. Hiatt?

A. Yes, sir.

Q. What shape was that land in those years?

A. That was a big coarse hay. We call it bluegrass, grows up 8 or 10 feet high, kind of canebreak stuff.

Q. Are you familiar with the Burgess land that lay just west of yours?

A. That eighty that is broke up?

Q. Yes, sir, and the Crothers land west of yours?

A. I saw it there, between mine and the road.

Q. What shape was that in, in the years you knew it, during the dry years?

A. That was farmed but it didn't look like it had a very good crop on it. One year about half was in corn, one year I think it laid idle and one year it had oats on.

Q. What quality of corn did it have on it?

A. It wasn't very good, it didn't grow very high, I don't
3372 think it got ripe.

Q. Did the land seem to be wet?

A. No, it wasn't wet, it was dry enough.

Q. Didn't seem to raise good crops?

A. No, sir.

Q. What was the quality of oats which you saw?

A. I don't know. I didn't see the oats threshed and I don't know what the quality was?

Q. The land south of the school, did you observe that?

A. Yes, sir.

Q. What kind of crops did they have down there?

A. That land has been broken out one time and let go back and they have been putting it up for hay, pieces of it, parts of it that were cleanest of weeds. Mostly grown up to weeds. Too weedy

for hay. It hasn't been farmed since I have been in the country, been used for hay, what they could get off of it.

Q. You refer to the east half of section 16, the Broderick land?

A. Yes, sir, that adjoins mine of the south.

Q. I think the west half of the section is owned by Mrs. Cleary.

A. I don't know very much about that. I think some of that has been broken up, I don't remember how that was.

Q. You know anything about the land still east of Broderick's land, lying next to the river?

A. That is the same thing as the other, coarse hay grows on it. There isn't anything broke, down from mine clear south to the road that goes to Blackmer that is all in prairie.

Q. Was it during the years you knew it?

A. No, never was broke up, that is, unless it was on the
3373 west along the road, south of mine there is nothing broke.

Q. That land in 21, the old Juleen place and Otto Anderson place?

A. That is on — south, you mean?

Q. Yes?

A. Where the granary is on the place?

Q. Well, the small buildings on the Juleen place and on the Anderson place next to the road that is——

A. I don't know much about it. I have been past there, I don't know much about it.

Q. Did you go down the road that goes south and east from your place down along the river?

A. To White Rock?

Q. Yes.

A. I have been down that road clear to White Rock different times.

Q. What kind of a road was that?

A. It wasn't a bad road when I was there.

Q. Was it graded up?

A. Graded some.

Q. What was the width of the grade?

A. Well, I don't just remember.

Q. Was it a high, well-graded, well-traveled road?

A. No, I don't think it was.

Q. At any time?

A. No, sir. It is a good road from Fairmount to Blackmer, good fine road next to town, but down to the railroad track on the west side, kind of rough, and then turn across the track and go down on the other side.

Q. Now, you say you sold this land to Powell and you called it $35.00 an acre?

A. Yes, sir.

3374 Q. In the fall of 1913?

A. Yes, sir.

Q. Do you think it was of greater value in the year 1914?

A. I don't know.

Q. Do you think it has as much value now as it was when you had it, at this time?

A. Oh, I think just about the same, outside of being broke up. I would sooner not have it broke.

Cross-examination.

By Mr. Pinkney:

Q. You regarded it as a pretty good investment the two or three years you owned it?

A. Yes, sir.

Q. You paid $30.00 an acre for it?

A. $25.00.

Q. And you owned it for three years?

A. Yes, sir.

Q. And regarded it as a pretty good investment?

A. Yes, sir.

Q. And you didn't do anything but take hay off part of it?

A. That is all I done.

Q. And you rented part of it?

A. Yes, sir.

Q. How much did you rent?

A. Well, I rented all of it but about 40 acres.

Q. Does it cost anything to break prairie sod?

3375 A. Sure it does.

Q. How much?

A. About $3.50 or $4.00 an acre.

Q. Is that the usual price?

A. Well, I guess some of them are getting $5.00.

Q. Isn't $5.00 the prevailing price all over the country?

A. I think it is now.

Q. If it was going to be cropped with grain crops it would be necessary to break it?

A. Yes, sir, if you was going to grain it.

Q. And if you had to break it at a cost of $5.00 per acre, that ought to add $5.00 to its value?

A. No, sir, not that land; it decreases it, it makes it worth less.

Q. Why?

A. Because that hay land is worth more than any crop.

Q. How do you know?

A. I know.

Q. Did you ever raise a crop on it in your life?

A. I don't believe anybody could.

Q. Did you ever raise a crop on it in your life?

A. No, sir.

Q. How do you know?

A. I know that hay is about as good a proposition as there is, it is third best crop there is.

Q. Do you pretend to state that hay is the most profitable crop you can raise on a piece of land?

A. It is the third most profitable crop.

Q. Is it as profitable as an ordinary wheat crop?

3376 A. More so.

Q. As profitable as an ordinary barley crop?

A. Yes, sir.

Q. Did you ever try this land on any of these crops?

A. No, sir.

Q. Then you don't know anything about it when you say it was more profitable for hay crop than for grain?

A. I know it by other lands and hay is considered the third best crop there is.

Q. Where you lived after that did you raise hay all the time?

A. No, sir.

Q. Why didn't you raise hay?

A. It was all broke up when I come there.

Q. You can reinstate the land?

A. Tame hay is not as profitable as when it is wild.

Q. Wild hay is more profitable than tame?

A. Sure it is.

Q. Hay crop is more profitable than any other kind of crop?

A. No, it is the third best crop.

Q. Who claims that?

A. The Government reports.

Q. They claim it is the third highest in value?

A. Yes, sir.

Q. Nobody claims it is a more profitable crop to raise than grain?

A. I usually consider it that way; cotton first, corn second and hay third.

Q. Don't you know that cotton lost its place as king along

3377 about 1861 and hasn't occupied it since?

A. I don't know anything about cotton, I am telling you what I heard.

Q. During the three years that you owned this quarter section here in 9, all of the years were dry years?

A. Yes, sir, they were dry enough so you could put up hay.

Q. Well, were they dry enough so you could raise cereal crops?

A. Well, I don't think so, not on all of it.

Q. Did you see any cereal crops grown anywhere around in those years?

A. What do you mean by cereal crops?

Q. Don't you know what cereal crops are?

A. No, sir.

Q. Let's take wheat, barley and oats as a starter, did you raise any such crops raised on any of the lands anywhere around there?

A. Off a way from the river I did.

Q. Mr. Powell, when he bought this land from you, evidently he thought cereal crops were more profitable because he went to work and broke it up?

A. Yes, sir.

Q. Do you know whether he has produced cereal crops on it every year since he got it from you up to the year 1915?

A. I know he hasn't raised anything only what flax he raised on the 30 acres the next year after he bought it, 1914.

Q. He has only had a chance to raise crops for one year?

A. I don't know.

Q. Was it flooded in the spring of 1915?

3378 A. I don't remember. I suppose it was, anyway he broke out some more in 1914, he claims and I know he broke out some more the next, second year.

Q. Do you know how much he has broken up?

A. No, I don't, I think somewhere around 50 acres.

Q. Have you seen it?

A. No, sir.

Q. Why do you say 50 acres?

A. I ain't sure. I mean he has broken some more, I passed there on the road. I wasn't on the land.

Q. You don't know whether he was flooded in 1914?

A. No, sir, I don't.

Q. You do know it wasn't flooded in 1913 or 1912 or 1911?

A. Yes, sir, I do.

Q. Did you ever see it before you traded for it?

A. No, sir.

Q. Traded it sight and unseen?

A. No, sir, I drove over it with the fellow that came up here, Vogue.

Q. You gave Mr. Powell a nice piece of land in the trade?

A. Yes, sir.

Q. Who got the worst of it?

A. It is hard to tell.

Redirect examination.

By Mr. Palmer:

Q. When you speak of hay being a profitable crop, do I understand that you mean upon such land as this was or is?

3379 Mr. Pinkney: We object to Mr. Palmer testifying unless he is sworn, we object to the form of the question.

A. Yes, sir.

Mr. Palmer:

Q. Mr. Hiatt, were you living over in East Taylor township through the seasons of 1915 and 1916?

A. Yes, sir.

Q. Will you state what the conditions were there through 1915 with respect to rainfall and wet conditions?

A. It was bad; didn't raise anything scarcely at all in 1915 and not anything at all in 1916.

Q. How much land did you operate in those years?

A. Well, I didn't farm any in 1916, but I was trying to farm about 600 acres.

Q. And what was the cause of your——
A. It was too much water.
Q. Water from what?
A. From common rainfall, I think.
Q. And in 1916 what is your recollection as to the rainfall, how did it compare with other years you have known?
A. It just kept a continual rain, that is all, and kept so much water on the land we couldn't farm it, couldn't raise anything. We never got a nickel's worth of anything not even a garden.
Q. That didn't ocme from the Bois de Sioux river or Lake Traverse on your land?
A. No, sir.
Q. Was your condition the general condition?
A. It was in that flat country, it is very flat.
Q. Is it a country very similar to this?
A. Well, no, I would consider this rolling around Fair-
3380 mount compared with that.
Q. I mean this territory along the Bois de Sioux river where this land of yours laid?
A. No, it isn't nothing like that, this is valuable land ordinary years.
Q. Where?
A. Out in the town of Taylor, worth $65.00 and $70.00 an acre in——
Q. But as to being flat?
A. Yes, sir, it is flat but the roads are graded up and they are getting in ditches. They did not have ditches in there to carry the water off fast enough.
Q. Did you hold any official position in your township of East Taylor through 1915 and 1916?
A. No.
Q. Did you have anything to do with the roads?
A. 1917, this year, I was road boss in the town of Taylor.
Q. How was it this last spring, 1917, as to grades being washed out?

Mr. Pinkney: We object to that as incompetent and immaterial.

Mr. Palmer:

Q. How far is the town of Taylor from here?
A. It ain't very far, about 3 miles from—I am mistaken, it is about 3 miles east and then it is a couple of miles back south, making about 5 miles to the nearest corner.
Q. What were the conditions there this last spring 1917?
A. They were in bad condition, the roads were.
3381 Q. Why?
A. Because they were washed out and bridges in bad shape.
Q. How was it through 1916 as to wash-outs and grades and bridges and culverts?
A. Washed out in bad shape, couldn't do much to them.

Q. Was that quite a general condition throughout that section?
A. It was a general condition throughout the town of Taylor.

Recross examination.

By Mr. Pinkney:

Q. Do I understand you to say these ditches you hav*ing* been putting over there in Traverse county carries the water off quicker now than it *it* used to when you had the level country?
A. If you had any in there I suppose carry it quicker.
Q. 1915 and 1916 you had some in there?
A. Not in our country.
Q. Didn't have any around there in 1915 and 1916?
A. Not where I live.
Q. Didn't have any ditches in there?
A. Not in there, I mean just where the roads is graded I don't mean judicial ditches or county ditches.
Q. You mean the ditches created by turnpiking the highways?
A. Yes, sir.
Q. You got them in there?
A. We had them in there since I came there.
3382 Q. You have always had them there?
A. Yes, sir.

Redirect examination.

By Mr. Palmer:

Q. You didn't have any county or public ditches in there in 1916?
A. No, sir.

WILLIAM RINGDAHL, being recalled in behalf of defendant, testified as follows.

Examined by Mr. Palmer:

Q. You have already testified as to your residence and official position in Traverse county, etc. Are you familiar with this land which has been designated as the flooded area in the town of Fairmount, North Dakota?
A. I am.
Q. How long have you known that land?
A. The first time I passed through that section, was, I think, in 1898, and I drove from White Rock with a team north towards Blackmer.
Q. Where did you go at that time, what was your destination?
A. I went up to this man, Otto Anderson.
Q. Where did he live?
A. He lived on the southeast quarter of Section 21, 129, 47.

3383 Q. What time of the year was it?
A. I think it was about the 20th day of July.
Q. What kind of a season was that, 1898?
A. It was a rather wet season, especially the first part of the season, that is the best of my recollection.
Q. At that time you did observe the conditions upon these lands that you drove through?
A. Especially on that quarter section, because Mr. Anderson and myself, we walked over it, he showed me the crops.
Q. You visited him there, did you?
A. Yes, sir.
Q. What was the condition of his crops?
A. Not the very best, it was very uneven on account of wet conditions; the low places on his land didn't have much of anything on.
Q. Was that a good crop year generally in this locality?
A. I don't believe it was.
Q. What was the condition of his land as to being low and wet?
A. The crop was short, it was just about headed out, say about a foot high, but on the higher places it was about 2 to 2½ feet high.
Q. And do you know about what the character of the crops were that Anderson raised there, how he got along? Was he a friend of yours?
A. He didn't get along very well.
Q. I say, was he a friend of yours?
3384 A. Yes, sir, he was a friend of mine. He stopped at Norcross and used to stay with us over nights sometimes with the family when he drive down to Herman to visits his relatives there.
Q. You say he didn't get along very well on this land?
A. No.
Q. Did you have information as to how he got along on this land?

Mr. Pinkney: We object to that as utterly incompetent and immaterial.

A. Nothing except what I heard and what he told me.

Mr. Palmer:

Q. Did you visit that locality again after that, Mr. Ringdahl?
A. I did in 1902, 3 and 4. I went through there several times.
Q. What was the occasion of your going through there?
A. I went up to Canada and so I drover through there several times.
Q. What seasons of the year?
A. In June, July and August.
Q. Did you drive again up t-is road to Anderson's place from White Rock?
A. I think I drove there once. Once in 1903 and once or twice in 1904.

Q. What was the condition of this road?

A. It wasn't very good; you could travel it and that was about all. It wasn't a high graded highway.

Q. Apparently not used to the traveling public generally was it?

A. For those people on that locality the main traveled highway was on the east side of the Bois de Sioux and also on the west side of the hills, on the Dakota hills and on the Minnesota
3385 side.

Q. On the Minnesota side and then west of this road on the Dakota hills?

A. Yes, sir.

Q. Did you observe the conditions as you traveled up through there?

A. I did to a certain extent but I didn't take any special notice of the conditions more than a general view of the community.

Q. Well, how did it look?

A. It didn't look very good to me.

Q. Why?

A. It didn't seem, they didn't seem to raise very good crops up in there, and tall grass along the Bois de Sioux river, I noticed that all over.

Q. Now, did you observe it subsequent years?

A. I don't recollect the years but I have been through there off and on ever since. In 1917 I have been through that part of the country three or four times.

Q. Have you been through from time to time from these trips in 1902 and 3 up to 1917?

A. I think I have been through that country three or four times since 1903 and 4.

Q. What business are you in?

A. I am in the farm loan business and farm insurance. I am on the board of county commissioners in Traverse County.

Q. And do you deal sometimes in real estate?

A. I haven't been dealing in real estate very much except in making farm loans. I have also been appraiser for farm loans for the Union Central Insurance Company.

3386 Q. For how long?

A. I have been making loans for them for the past 20 years and I have been appraiser for them for the past 3 years.

Q. Are you able to form an opinion as to the fair market value of these lands in this flooded area?

Mr. Pinkney: Object to that as it does not appear that the witness has any knowledge whatever of the market value of the lands in this territory, never having bought or sold any lands or made any loans on them.

Mr. Palmer:

Q. Have you information as to the value of lands through this locality generally?

A. I have a general information from my knowledge of lands and from the appearance of the lands and the soil conditions and so on.

Q. How far are these lands from Wheaton where you live?

A. They are about 14 miles.

Q. How far are they from Traverse county?

A. They are adjacent to the west border of Traverse county.

Q. Traverse county borders these lands on the east?

A. Yes.

Q. Well, now, you say you have an opinion as to the market value of these lands; what is your opinion?

A. I should say that the market value varies from $20 to $35.

Q. Is that at this time?

A. At this time.

Q. Before these floods of 1915 and 1916 what would you say as to their market value?

A. About the same.

3387 Q. How long did you say you have been one of the county commissioners of Traverse County?

A. Since January 1st, 1907.

Q. And do you have to do with the building of county roads?

A. Yes, sir.

Q. And the putting in of bridges, etc.?

A. Yes, sir, culverts.

Q. Do you know the going contract price per mile for grading ordinary new prairie roads?

A. Yes, sir.

Q. What is it?

A. On smooth prairie where there is no end haul it runs about $250 to $300 a mile. That is what we consider the best, highest turnpike roads.

Q. That is new roads?

A. 24 foot top, crown.

Q. That is, new roads?

A. Yes, sir, that is new roads, or on some places it has been a small grade before, previous to that. We hardly ever have any places in Traverse county where there has not been some original grading before.

Q. What was the situation in Traverse county in 1916 as to wash-outs or grades and bridges?

Mr. Pinkney: We object to that as incompetent, immaterial and irrelevant.

Q. We were troubled with wash-outs of roads and bridges and culverts during the years 1915 and 1916 both those seasons. Cost us lots of money to replace the roads, had to keep men constantly at work.

3388 Mr. Palmer:

Q. Was that a general condition throughout this section of the country?

A. Yes, sir, it was in Traverse county.

Q. And was it in adjoining counties?
A. As far as I know it was.

Cross-examination.

By Mr. Pinkney:

Q. Mr. Ringdahl, I wish you would tell us what time or place or what lands of these flooded lands in Fairmount township Richland County, North Dakota, you have known to have been sold at a price of from $20.00 to $35.00 an acre?

A. I don't know; I don't know about the sales of those lands; I have only, as I stated here, placed my valuations upon my knowledge of the land.

Q. You placed you- valuation on the values of land on the principle that you place them for insurance purposes, didn't you?

A.-Yes, sir, and also what I have seen in these years of the land.

Q. You don't know a single instance where a sale of any of these lands has been made and at a price of from $20.00 to $35.00 an acre, have you?

A. I have not been i-strumental in selling any at all.

Q. Do you know of a single instance?

A. No, sir, I do not.

Q. Now, Mr. Ringdahl, as I understand you, the cost of grading roads runs from $250 to $300 per mile in a new open country?

A. No, I didn't say that. I said where the prairie is level and smooth and in most of those instances there has been a nar-
3389 row country road before, but when we have re-graded those we have opened it up, say 6 to 8 feet on both sides and made it so much wider.

Q. Dosen't the cost of the grading of these roads largely depend in every instance upon the amount of dirt you have got to move to grade them at the required height?

A. It does, whenever they are on swales and end-hauls.

Q. Swales and depressions have a great deal to do with the cost of the construction of these roads, do they not?

A. Yes, sir, we have been paying, I think, 6¢ a lineal foot plus end-hauls where we have to make fills, and the end hauls are generally figured from 14 to 16 cents a cubic yard.

Q. How much of a crown would you give to a road 25 feet in width that you could have made for $250 per mile?

A. You mean above the level of the prairie?

Q. How much of a crown?

A. The crown of a road is generally 8 to 10 inches on 24 feet.

Q. How much would that cost?

A. That is the road I have been speaking about.

Q. If the crown is 6 inches higher would it cost any more?

A. Certainly it would.

Q [illegible] much more?

A. I think it would cost about $350, but you hardly ever find a road that has a crown of 18 inches.

Q. If you had built a road with a crown of that extent, it would cost in your judgment $350?

A. Yes, sir.

Q. You don't think that $350 for that kind of a road would be out of the way, that is, with an 18 inch crown, 24 feet wide?

3390 A. No, it would not. These country roads that the townships are building, they are nothing to compare with these roads I am speaking about now, you understand. The townships are building a road that is about 16 foot wide, but this road I am talking about now is a road that has a 24 foot crown on it, it is about 40 foot between the outside of the ditch to the outside of the ditch.

Q. Over the crown?

A. Yes, sir, over the crown.

Q. Don't you know that Fairmount township has a great many roads of that character?

A. It has a good road from Fairmount east to this bridge.

Q. And isn't this road right down here east of town running north and south?

A. That is the one I mean?

Q. Wasn't that picked out and established for the international highway by a committee of gentlemen from several states of the Union that went through this county several years ago?

A. I kind of think it was.

Q. And because of the fact that it was an exceptionally fine road, wasn't it?

A. Now, I can't say. I believe that the committee was in favor of laying out that road on the west side of the Lake clear up to Fairmount, but I think there was some influence brought because I was along on that meeting and they brought it through further east up through the Bois de Sioux valley. They fought very hard to get it in through there, I know that.

3391 Q. Mr. Ringdahl, have you any interest in the result of this suit?

A. No, sir.

Q. Have you taken any part in the preparation of the case for the State of Minnesota or in the securing of the testimony offered?

A. I have been securing some of the witnesses.

Q. You have been acting and aiding Mr. Palmer in securing the attendance of witnesses and gaining knowledge of what they would testify to, have you not?

A. To a certain extent, I have.

Q. Outside of the fact that you have been helping him you have no further interest?

A. No, sir.

Mr. Palmer: You have been employed by the day for that?

A. Been employed by the State by the day.

(Hearing to be resumed later by agreement of parties.)

3392 February 13, 1918, at 10 a. m.

Hearing in this case was resumed at the retiring room of the House of Representatives at the State Capitol at St. Paul, Minnesota, on February 15, 1918, at 10 o'clock a. m. Counsel for both parties were present.

The following proceedings were had.

FRENCIS C. SHENEHON, being recalled in behalf of complainant, testified as follows:

Examined by Mr. Boutelle:

Q. In your previous testimony, Dean Shenehon, I believe you stated that you had been over the ground in the Bois de Sioux valley?

A. Yes.

Q. And had the opportunity and did observe the roads crossing the valley from east to west that have been described to you?

A. Yes.

Q. It has been stated in substance that—in the testimony of Professor Bass for the defense—that these so called east and west roads crossing the valley were either partially productive of flood conditions or tended to aggravate those flood conditions I will ask you to state your own opinion from an engineering standpoint with reference to that contention?

A. Aside from the causeway or road at White Rock I know of no road crossing the river valley that would be any impediment or raise the level of the water above it more than a fraction of an inch.

Q. Then, considering the flood conditions that have been disclosed in the testimony here in this valley, what would you
3393 say as to the effect of those roads on those conditions?

A. They are negligible.

Q. It appeared in the testimony of Professor Bass that according to investigations made be Engineer Nelson, the highwater mark in Lake Traverse was reached at 976.61 in April 1916; and in the same connection this mark is said to have been substantially the same as reached in 1881. I will ask you to state as to whether or no that identity in water levels, assuming it to have existed as claimed, has any bearing on the questions with which we are dealing?

A. In my judgment it has not. In the case of the flood of 1916 as I understand the testimony, a continuance of the water or crest level was over a very considerable period. I haven't heard any testimony as to the duration of the high water mark of the earlier period. It is not inconceivable that this might be due to what is known as the seiche, that the swing of the water, the pendulum swing of the water in the lake might temporarily have brought it up to a certain mark that would be made on a stone by an observer and this might continue for half an hour under those circumstances. It is a very familiar thing in lakes.

Mr. Palmer:

Q. Half an hour?

A. It might *ne* half an hour or less. You understand this is a form of wave that swings back and forth across the lake or lengthwise of the lake.

Mr. Boutelle:

Q. Then, so far as the flood conditions are concerned, what is the essential connection between those conditions and the lake level?

A. Let me see if I understand you. The earlier flood while it may have touched the mark on the stone observed by Mr. Nelson, may have been of short duration, it may have been in a period of even more plenteous rainfall than the flood of 1916 and my judg-
3394 ment would be that if this marked any continuous elevation of Lake Traverse that with the artificial system of ditches and laterals and cut-offs, the state ditch and rectified river it would have been higher still at that time.

Q. Then I suppose that in these flood conditions the time of maintainance or time during which the levels are maintained is the essential fact of flood conditions?

A. From the point of view of the farmer doubtless.

Q. It is said in substance by Professor Bass that, assuming the level of 969 of the waters of the Bois de Sioux river at the Gt. Northern Bridge just north of Fairmount and basing the calculations on the slope of the bottom of the channel at that point, the velocity was estimated at 2.7 feet; resulting in determining the discharge at that point at 2,000 second feet. What will you say as to the accuracy of those computations in the light of your own investigation?

A. The elevation you stated was 969 water surface at the high bridge, Mr. Boutelle. That is a foot and a half higher than the elevation as I have it assumed by the water during the flood. My consecutive levels, Lake Traverse 977, and the corresponding elevation at the high bridge, 967.5 is that contemplated in the question?

Q. That partially answers it. What I wish to inquire, Dean Shenehon, is as to the accuracy of that estimate of a discharge of 2,000 second feet at that point in your opinion?

A. I have no record of any discharge of 2,000 second feet. The highest water I have is 967.5. My discharge for that velocity is 1,450 cubic feet per second.

Q. In the testimony of Professor Bass, relating to the comparative discharge capacity of the original channel around the bend
3395 compared with what we have termed the cut-off, the computation of the witness resulted in 1,500 feet for the original channel and 1,000 feet for the cut-off. The factor of velocity in the original channel in those computations was testified to, have been taken at 1.6 feet and the similar factor in the cut-off at 2.4 feet, with the latter's cross sectional area of 400 feet. In the same connection it was stated that the average fall of the cut-off throughout its entire length was 2.1 feet to the mile but it was assumed that that

average was not a fair criterion in determining the velocity; and in the same connection a considerable emphasis was placed on the circumstances that the bottom of the cut-off showed a negative gradient for the first 1,800 feet, a slight negative gradient. I will ask you to state from an engineering standpoint your own opinion as to the correctness of those conclusions.

Q. I understand from Professor Bass's own testimony that the negative gradient is not a fact and when I state this *in* am simply taking the reduction of Professor Bass's elevation made by Professor Chandler, I have not independently made that reduction. If the negative gradient did exist the flow of the channel would not be increased by filling up the upper end so that there would be a slope on the bottom. As regards the velocities and the volume of flow in the Mustinka river in the loop and the cut-off, in my judgment the capacity of the cut-off is in excess of the capacity of the river loop.

Q. Assuming the physical conditions as you yourself have observed them, by that I mean the tortuous or more or less tortuous channel of the natural stream with the newly constructed, clean and direct channel of the cut-off and assuming that the ordinary
3396 velocity in the original channel was 1.6 feet, what would you say as to any estimate placing the velocity of the cut-off at as low a figure as 2.4?

A. I think it is an absurdly low value.

Q. And will you state briefly your reasons for that?

A. My reasons are that the elevation of the water surface at the up stream end of the cut-off and the Mustinka river and the down stream end of the cut-off—the water surface for the river and the cut-off are substantially identical—so that the fall, which I understand is about 5 feet or is taken as 5 feet in Mr. Bass's determination, must be one third as great, the slope must be one third as great, in the river loop as it is in the cut off, or the slope of the cut-off per mile must be three times that of the river. This would indicate, all outer conditions being equal, that the velocity in the cut-off would be 73 per cent *on* excess of the velocity in the river, but all other conditions are not identical. The cut-off is a clean prism flowing straight away from its beginning to its end, with the exception of a curvature at the lower end of perhaps 90 degrees. It is a compact channel, in good condition for flow. The natural coefficient of flow is high, although those coefficients are stated conversely, the smaller coefficient shows the higher velocity. The Mustinka channel on the other hand is meandering; as I had it figured out it made, in the six or seven miles of its course, at least, turns amounting to six complete circles. The cross sectional area varies from point to point. It is obstructed by weeds and growths, the velocity of the current evidently being so slow that these are not removed even in flood time. So that we have a situation where the final conclusion as to volume would indicate that the cut-off volume is in excess of the
3397 Mustinka loop volume. There has to be added to this, however, that the rectification of the river below the junction of the cut-off has doubtless increased the capacity of the loop itself by lowering the water surface at that point, giving a higher gradient.

Q. Yes, I will take that up. Are there any complicated engineering factors presented by the physical condition of this cut-off so far as the determination of capacity is concerned?

A. Compared to the loop—no.

Q. Then, based on the matters which you have last explained, Dean, would you be prepared to put a minimum figure on the velocity of the cut off?

A. My judgment is that the velocity of the flow in the cut-off was between 4½ and 5 feet per second average velocity.

Q. The depth of the water or the height of the surface levels constitutes a material factor in determining velocity of a channel of this kind, doesn't it?

A. The depth of the water?

Q. Yes.

A. The general hydraulic relation between depth and velocity is that the velocity varies as three halves power of the depth.

Q. It has been suggested in this case and reference has been made to suggestions in Professor Bass's testimony that the cut-off would be frozen up at the peak of the flood and the latter might therefore be expected to pass through the natural channel and in that connection it was stated by Professor Bass that an east and west
3398 channel would be less effected by the sun than a channel running north and south. What have you to say as to that?

A. Well, Professor Bass has comply confused the directions; the converse in my judgment would be the truth. I might add further that this matter of the obstruction of the channel during the peak of the flood by ice is something that I cannot comprehend as a fact. Ice is lighter than water, it floats. We are all familiar with that, and as soon as we have any flood conditions any ice that may be in the bottom of a channel the size of the cut-off will be floated down stream and the channel will assume its original uniced condition. I cannot conceive that ice can be so tightly frozen to a gracial drift bottom that it can't come up when the water comes along.

Q. Is there anything then, Dean, in the condition there that would suggest to your mind an appreciable difference between the opening of the cut-off and the opening of the natural channel, in your opinion?

A. No, sir, and I so stated in my original testimony. It appears to me that in a number of those matters Professor Bass has grasped at straws.

Q. Is there any significance in your opinion in the reference to the so called peak of the flood so far as these flood conditions are concerned?

A. The crest of the flood is the high water mark, and the duration of the maintenance of the water at that particular crest, I don't know about. Peak may be a proper term to use instead of crest in the case of a flood, I wouldn't question that.

Q. I suppose the existent flood conditions depend upon the
3399 length of time during which high stages of water continue, do they not?

A. Yes, sir.

Q. And when we speak of the peak of the flood we mean simply the highest stage, there may be a considerable, — perhaps during which the water is going up, and a considerable period during which it is receding, that might be true?

A. Yes, sir, and at the peak would be the time there would be the least possibility of any ice remaining in the cut-off ditch.

Q. In Professor Bass's testimony, Dean, various references have been made to the readings taken at or in the vicinity of Wheaton, in the years 1916 and 1917, following the 1916 flood. I would like to ask you whether or no those readings have any bearing on materiality on any questions with which we are dealing in this case?

A. Readings made in 1916, the measurements made by the Geological Survey, were mentioned by me in my original testimony and did give me a measure of the quantity of water that flowed at the crest of the flood. To that extent I can say that those measures have some relevancy.

Q. Was the stage of the water at the time these readings were taken at Wheaton the same stage that was reached during the floods of 1915 and 1916?

A. No, the gauge read very much lower but the measurements taken at two readings of the gauge give an opportunity to project the log discharge somewhat roughly to the higher stage and getting an estimate off the quantity of water that was flowing during the 1916 flood. In that way it has some relevancy.

3400 Q. If I understand you correctly, it is simply for comparative purposes, the purpose of comparison?

A. Yes, sir.

Q. As relates to the flood conditions involved in this case is the matter of quantity of volume of discharge at this outlet at a particular time the decisive factor?

A. And by "this outlet" you mean?

Q. That we are speaking of, here at Wheaton?

A. My judgment is that water that reaches the bridge at Wheaton will go on down to Lake Traverse and water presented for discharge at the junction of the cut off and the Mustinka under the present condition will reach Wheaton in a reasonably short time, as compared with the conditions in a state of nature.

Q. Well then, Dean, what is the controlling question with reference to those flood conditions?

A. That the volume of water reaching Wheaton and reaching Lake Traverse was very considerable in excess of the volume of water that would have been presented in the same time in a state of nature.

Q. In the testimony of Professor Bass and I think that of Professor Sardeson as well, as a considerable amount of emphasis has been laid on the fact that Twelve Mile Creek cuts the ditch at substantially right angles and that the main stream or flow follows the original channel instead of the ditch. What will you say as to that from an engineering standpoint?

A. I did not hear Professor Bass's testimony and I haven't read it as he gave it. From the abstract I did read I did not gather that

Professor Bass laid any particular emphasis on that point.
3401 If he did why it was another case of grasping at a straw. My computations would indicate that there might be an added flow in the loop of 1 per cent coming from this cause, which might mean 10 or 15 cubic feet per second and that is one of those little things we do not need to give consideration to in this big case.

Q. From an engineering standpoint, assuming, to get an arbitrary illustration, the construction of a ditch at right angles across a natural waterway, would the circumstance that the ditch was put at right angles have any effect upon the flow?

A. A very trivial effect. If waters flowing in a certain direction, which we will say is directly towards the Mustinka and the loop, and a ditch is cut at right angles to it, there will be a little advantage in head for the loop. In other words, you convert the velocity in a particular direction into additional head, a process very familiar to Professor Bass, an as I computed it this additional head would be in the neighborhood of three quarters of an inch, so that we have a total slope in going around the loop 5 feet and three quarters inches instead of 5 feet, but that as I figure would cause approximately 1 per cent increase in velocity of the loop. The ditch, on the other hand, would not have this advantage and the additional three-quarter inch.

Q. Would there be any appreciable or practical effect of a damming result?

A. Not at all, no.

Q. In Professor Bass's testimony it is stated, in substance, that, taking the readings at Wheaton, for instance, for July, 1916, there would appear to be what he terms 50 second feet excess flow over
3402 the 1,500 second feet capacity estimated for the original channel round the bend, and in 1917, according to the estimate this excess carried from 90 to 730 feet. The result of those computations is stated in substance to be that the excess might account for a rise in the waters of Lake Traverse in the respective seasons of from $\frac{3}{8}$ of an inch to about 2 inches. What have you to say about that?

A. I think that conclusion is erroneous.

Q. Will you state why?

A. Because the water presented at the junction of the loop and cut-off is now under the artificial conditions greater than it would be in a state of nature. Consequently at the present time, the cut-off ditch takes water before the loop. When I visited Wheaton and the Mustinka river and the cut-off on September 16, of last year I found a flow in the cut-off when there was none in the loop. The water was traversing the cut-off not the loop.

Q. Well, do those figures, then based on the assumption of natural flow around the loop and the volume at a given time at the point of discharge in excess of the varying capacity of the loop, do they prove anything or establish anything from an engineering standpoint, in this case?

A. In my judgment, no.

Q. In professor Bass's testimony, an estimate has been included

that the time required by the waters in flowing from the point of confluence of Twelve Mile creek and the original channel would be 18 hours to the outlet, and the time of flow through the cut-off from the confluence with Twelve Mile creek would be 9 hours. From an engineering standpoint do those factors have any material significance or bearing on anything we are dealing with in this case.

3403 A. They show even in velocity a higher speed under the new artificial conditions but we must introduce also the element of volume and we must introduce also the element that water that would have lain on the prairies and evaporated comes down under the new conditions, that didn't get down under the old natural conditions?

Q. It is stated in Professor Bass's testimony that when a point is reached where the level of the water is such that the ditches are completely submerged they would cease to function, what would you say about that contention from an engineering standpoint?

A. So long as there is any gradient in the direction of the ditch the ditch must function. If the submergence were of the character of a dam and simply overflowed the land and destroyed any gradient of course, there wouldn't be any function. The water can not run unless it is running downhill.

Q. Are we dealing in this case with anything that presents in the submergence of these ditches that damming effect to which you last referred?

A. In a state of nature of course, there were no ditches and therefore we didn't have anything corresponding to the question you asked.

Q. Then what would you say, Dean, as to the statement that when these ditches with which we are dealing are overflowed they cease to function?

A. It appears to me it has little relevancy. I may add to that that a similar sitution is presented in the vlley of the Bois de Sioux river, that while the lands are submerged in the vincinity of Fair-

3404 mount and the natural channel is submerged, that the natural channel still goes on functioning.

Q. In the testimony of Professor Bass it is claimed that the rectification, as we have termed it, of the original channel of the Mustinka south and west of the outlet of the cut-off had no appreciable effect. What will you say as to that?

A. In my judgment it undoubtedly lowered the flood plane, produced a higher discharge capacity for the loop and permitted the waters to flow more rapidly towards Lake Traverse, as indicated by Professor Bass's own computation of time.

Q. And would the same condition hold good with refererence to increasing the capacity of the cut-off, the rectification of this channel?

A. If the cut-off had been built without the rectification of the channel it would have had a somewhat smaller flow capacity.

Cross-examination.

By Mr. Palmer:

Q. I observe that you still take into consideration the bringing down of large quantities of water which would have lain in the prairies. Do you still base your opinion as given here upon the existence of 75 to 100 square miles of overflow lands in the delta zone, so-called, colored blue upon the map, Complainant's Exhibit 1?

A. I still give my adherence to all matters relating to what we called the draining basin above the cut-off in my original testimony.

Q. It appears from the testimony here that the so-called delta zone of from 75 to 100 square miles assumed by you in your former
3405 testimony to have been a lake surface or practically so prior to the construction of any of these ditches, that is in the year 1895 and prior thereto, consisted of 132 cultivated farms with structures, fences, groves and all of the ordinary farm improvements, the land cultivated from year to year and that no part of it except perhaps two or three square miles was ever a surface corresponding to that assumed by you in your former testimony. I will ask you if that fact would have any bearing upon your opinion given here?

A. I am afraid you misinterpret my testimony, Mr. Palmer. This lake that you speak of as existing in my testimony I think of as water on an incline corresponding to the surface of the ground on the watershed tributary to the cut off that has been artificially treated and that it might have been half an inch deep or an inch deep or two inches deep and I think I so stated in my original testimony; that this water is proceeding, because there is a gradient, at an exceedingly slow pace as it comes towards the confluence; at the confluence itself there was flooding of greater depth and that this whole detaining basin covering the meshwork of ditches made effective by the cut off and the rectified river were involved. I tried to make clear that we might think of the Bois de Sioux in the vicinity of Fairmount above the high bridge as a lake. As a matter of fact, we all know that there was a flow at the same time proceeding but I stated that the flow outside of the channel towards the edges was so extremely slow that perhaps one-tenth of a foot per second might measure it and my conception of the detaining basin above the cut-off is of this kind. It is an exceedingly slow flow of water that may be exceedingly shallow but deep enough to evaporate. I think
3406 I stated also that the evaporation from a surface of water a quarter of an inch deep might be greater than if it were two feet deep and that some water in a state of nature would never reach Lake Traverse, it would go off into the air under the great laws of evaporation.

Q. You still assume in your answer particularly in speaking of the water that would lay on the prairies that there was from 75 to 100 square miles in the so-called delta zone that was flooded with water from one to two inches in depth, do you?

A. I am inclined to think I mentioned a one-sixteenth of an inch

on one case. I am not precise as to the depth of water that might have lain over this ground or that was traveling very slowly over this ground, and I think the area considered is wherever the artificial conditions apply in the water shed where ditches existed in 1916 that did not exist in a state of nature.

Q. I am speaking about the conditions assumed by you to have existed in a state of nature and before the construction of any ditches; is it as I have stated?

A. That 132 farms had existed and were under cultivation, is that what we are still talking about?

Q. No, I don't mean that. I mean, do you still assume in a state of nature the conditions that I have stated, to wit, 75 to 100 square miles of land in this so-called delta zone covered with water to a depth of from one sixteenth of an inch I will say, to two inches?

A. Yes, under certain conditions of precipitation or melting snow. I am not sure about the 75 to 100 miles, I am not sure I so stated it in that way in my original testimony.

Q. What area do you assume in this detaining basin, the so-called delta zone?

3407 A. Any area tributary to any artificial condition, where the artificial condition had been imposed prior to 1916.

Q. That is, you assume that there existed whatever area did exist?

A. Yes, the area which has been subject to an attempt on the part of the engineers of the State of Minnesota to get rid of the water, and I am assuming further that their attempt was not entirely stultified, that they did succeed in bringing down a very considerable percentage of water more than came down before in a state of nature and more rapidly?

Q. That is, you assume that these ditches did whatever they might have been alleged to accomplish?

A. I don't know the allegations, Mr. Palmer, but to me as an engineer, driving over a great stretch of country involving hundreds of square miles and seeing ditches, knowing that there was a gradient to the country from maps and contour lines, that there must have been very considerable flow in those ditches, and that this flow brought water to the confluence of the cut-off and the Mustinka that in a state of nature must have lain on the prairie and evaporated, and brought that water—brought some water that would have reached the confluence in a state of nature but brought it very much more rapidly, creating flood conditions.

Q. What effect in a state of nature did the quantity of water which you assume remained on the ground in this so-called delta zone have upon the lands from an agricultural standpoint?

A. I imagine they were too wet for the best conditions of cultivation, that while the water was evaporating that the plowing was rendered difficult and possibly the seed rotted if it were put in the ground at all.

3408 Q. Does your imagination extend as far as to imagine that they were unfit for ordinary cultivation?

A. I have no doubt that the 132 farms stated by you raised some crops; they doubtless had pasturage and meadow land in addition.

Q. Then, assuming that there was not sufficient water that remained upon the land in this so-called Delta zone to prevent ordinary agricultural use of the land and that there did exist within this Delta zone the number of cultivated and improved farms that I have mentioned, your opinion would remain the same that there was sufficient water taken from them in the years 1915 and 1916 to account for those floods in the Bois de Sioux valley over what would naturally have flowed from them in a state of nature?

A. Yes, that was the statement in my original testimony to which I adhere.

Q. So eliminating the delta zone theory advanced here by the witness Ralph, you have just the same opinion as you had when you assumed that there were 75 to 100 square miles overflowed area there, Dean Shenehon?

A. I am afraid we are getting confused by this term "overflowed"——

Q. Yes, I am afraid you are too.

A. The flow in part of course, comes from the heavens in the form of rain or snow, and it is all these contributing things I have in mind in speaking of this detaining basin above the state ditch and above the cut-off ditch and in that area where any artificial construction has been made. Water which was never brought down before, water in a state of nature that would have lain in the ground, 3409 was brought and the water that might have been brought down in a state of nature was brought down much more rapidly by this improved transportation system provided by artificial construction.

Q. Your opinion is that notwithstanding that in a state of nature there may have been some 132 cultivated farms within this Delta zone, suitable for ordinary agricultural use and cultivation, that it would still be a detaining basin for sufficient quantities of water to account for these flood conditions in the Bois de Sioux valley?

A. I am afraid I don't quite follow you, Mr. Palmer, I think my answers have been very clear. I have repeated it a number of times and I did also in my original testimony that the artificial constructions in the State of Minnesota account for the floods in Lake Traverse and the Bois de Sioux valley.

Q. You would attach then no importance to the existence or nonexistence of this Delta zone as testified here to by Mr. Ralph?

A. You mean to the delimitation or marking it out with certain boundaries as the entire cause, is that what your question means?

Q. Yes, and the character of it is as he testified to that he observed it; I take it that you never saw it, you don't know anything about it?

A. You mean when it was flooded?

Q. Yes?

A. No, I have never visited this country in flood times, I think my answer as it stands is very clear, Mr. Palmer, my conception of the whole situation?

Q. Do you assume that the testimony given by the witness, Ralph,

as to this Delta zone and the delimitation as he has placed it
3410 upon this map, complainant's exhibit 1, and as he has described it alleging that he saw it in that condition personally; do you assume that that is true?

A. I give the highest creditability to any statement of what Mr. Ralph has seen as to the conditions that he observed on the ground. My independent conclusions have not been entirely—Have not been based on Mr. Ralph's evidence, because I did not hear it except in part and I have not read his testimony; but I have no reason to doubt the credibility of Mr. Ralph.

Q. Well, his testimony was that this so-called delta zone that he has delineated upon this map in the light blue color was substantially a lake surface, that is was wholly unsuited for human habitation in a state of nature, and that there was none farmed except perhaps ten or a dozen places on the high spots and on the edges of it, and otherwise it was a watery waste; whereas, the testimony of those living upon it in a state of nature and the tax records of the county show it to have been consisting as I have said of about 132 cultivated and improved farms and lands suited for ordinary agricultural purposes. I want to know which of those statements in your theories here you assume to be true?

Mr. Boutelle: Just a minute. That is objected to as involving an assumed state of facts that does not exist, argumentative, assuming to state what the testimony discloses in its entirety and not as a properly formed hypothetical question.

A. It appears to me Mr. Palmer that you should work out with Mr. Ralph in cross-examination as to any conditions which he has stated in his testimony, which I have stated I have not heard. Except in part, or read. I have formed my independent con-
3411 clusions from my study of the situation on the ground and have stated them about as clearly as I am able to. In 1917, which was a dry year, the lack of the farmer was not ditches but rainfall, he needed water. I imagine that was true in 1910, and through other years and that habitable, workable farms existing during those years, when the farmer prayed for rain not ditches.

Mr. Palmer:

Q. I have asked you which of these conditions you have assumed to have existed there in a state of nature and before the construction of any ditches; I have reference now to a period being prior to the construction of the first state ditch in 1896.

Mr. Boutelle: That question is objected to on the ground that the witness has already answered and stated that he has his conclusions upon neither of the hypotheses suggested by counsel, but on the other hand on the result of his own investigation.

A. I have not the slightest doubt, Mr. Palmer, that in a state of nature there was considerable flooding at the confluence of the various branches of the Mustinka. I think we have every evidence of

that and I have not attempted to remark that in my own observations, mark a line on the map that would represent it, represent the extent of the flooding because, as I say, if the flooding is a quarter of an inch deep, or an inch deep, or half an inch deep, that would make the land untenable while it existed for farming purposes, and that these ditches, the various laterals leading to the confluence and the cut-off ditch, the rectified river which made the whole ditch system effective were constructed to obviate, to get away from that condition.

3412 Mr. Palmer:

Q. The presence of this water which you stated would have lain on the prairie in a state of nature would, I take it, at least, have made the lands within this so-called delta zone, of a swampy or marshy character?

A. It depends on the length of the continuance of the water; water remaining through March and April into May might not necessarily create marshes. Some marshes, undoubtedly, did exist; there is evidence of that on the ground. But a flood is the precipitation within a short time of water that would otherwise lie on the ground and evaporate. Evaporation will take off of the ground in a month three or four or five inches in depth of water but the ditches will take it off much more rapidly and in greater volume.

Q. The larger portion of this assumed delta zone appears to have been in the township of Clifton, township 127 of range 45 in Traverse County, Minnesota, would you say that in a state of nature those lands would have been of a swampy, marshy character?

A. I don't think that follows, Mr. Palmer, that all of these lands even within the lands demarked by Mr. Ralph would necessarily be of a swampy character.

Q. Would any of them necessarily be of a swampy character?

A. Yes, sir.

Q. How large a proportion?

A. I don't know.

Q. The lands seem to have been surveyed by the Government along in 1859. Of course, we would naturally assume that at that time they existed practically in a state of nature, would we not?

3413 A. I should judge so, yes, sir.

(Defendant's Exhibit 112, is marked.)

Q. I show you defendant's exhibit 112, being a plat of the government survey of this township of Clifton and will ask you to point out one foot of land on that township that is designated as swampy or marshy land?

Mr. Bronson: That is objected to upon the ground that the map shows for itself.

A. The plat gives no indication of the character of the land, whether it is meadow land or marsh or wooded.

Mr. Palmer:

Q. There does not seem to be any marked marsh or swamp?
A. No topographical indication of that.

(Defendant's Exhibits 113 and 114 are marked.)

Q. A considerable part of the western portion of Logan township in Grant County in township 127 of range 44, appears to be included in this delta zone on the map, Complainant's Exhibit 1?
A. Yes.
Q. Let me call your attention to defendant's exhibit 113, being the government plat of that township, particularly to the platting of the western portion and will ask you to point out any lands there designated as of a swampy or marshy character?
A. Within the limits corresponding to the delta zone on Complainant's exhibit No. 1, I do not find on this plat, defendant's exhibit 113, any topographical sign indicating the character of the land, whether marshy, meadow, cultivated, wooded or otherwise.

3414 Q. A considerable portion of the western part of the township of Gorton, being township 128, range 44, appears to be within this so-called delta zone. I call your attention to defendant's exhibit 114, being the government plat of the survey of that township and will ask you if any part of that is designated as swampy or marshy land, that is, within those lands designated as part of the delta zone on the Complainant's exhibit 1?
A. I do not find on the Defendant's Exhibit 114, any topographical sign whatever within the limits of the delta zone indicating whether the ground surface is prairie, marsh, meadow, cultivated, wooded or otherwise.

(Defendant's Exhibit 115, is marked.)

Q. A considerable portion of the township of Redpath, being township 128, of range 45, in Traverse County, appears to be included in this so called delta zone on complainant's exhibit 1, I call your attention to Defendant's exhibit 115, being the Government plat of the survey of that township; do you find any area of that designated as swampy marshy land?
A. On defendant's exhibit 115, I find a considerable area covering perhaps three or four square miles indicated as marsh land. This is within the limits of the so-called delta zone as indicated on Complainant's exhibit 1.
Q. Now, assuming that in a state of nature there were no more of those lands within this so-called delta zone, or detaining basin rendered swampy or marshy by reason of the water lying on the prairie as you have stated; would that make any difference with your opinion?
A. No, those are evidently permanent marshes as opposed to a detaining basin operative during the spring of the year or in times of plentiful rainfall. If a government survey were made in a dry

season like 1917, I imagine they would have found in these
3415 areas no more evidence of marsh lands than appear on this map, permanent marsh lands.

Q. You assume I take it in your answer and in forming your opinion that a much larger quantity of water was drained and carried off of these lands within the so-called delta zone, and carried off in a much shorter period of time, than in a state of nature?

A. Yes.

Q. So that, after the construction of the cut-off ditch and the rectified river below it in 1914, there was necessarily a far less flooding of the land in this so-called delta zone than in a state of nature?

A. Precipitation conditions and other natural conditions being the same, yes.

Q. The testimony of the owners of these lands and residing upon them is that there was practical- no flooding within its so-called delta zone, no loss of crops from excessive wet conditions except in the years 1914, 1915 and 1916, and that extending from a period of about 1887 down to 1914. Would that fact make any difference in your opinion at all?

A. The evidence indicates that the rainfall descended upon those lands that we have — talking — and there was constructed a system of transportation to remove the water from the land. These are the artificial constructions,—I conclude therefore that the transportation system did act and carry away the water coming from the rainfall.

Q. And if it did not, then your opinion would be altered accordingly?

A. You mean, that if this artificial construction of ditches running down hill, including the cut-off ditch and the rectified
3416 Mustinka did not serve to carry away the water, or great quantities of it; I should be very much disappointed in the ditches after having seen them.

Q. I am not very much concerned whether it is disappointing to you to alter your opinion in the matter or disappointing to those you represent: I wish you would answer the question that I asked categorically?

A. I would like to use instead of the word disappointed which is a case where I grasped at a straw and got the wrong word, technically surprised, the phrase, technically surprised. I should say that all the laws and all the common sense relating to the flow of water has, somehow or other, been emasculated.

Q. But I ask you, if the fact should be that these ditches did not carry away the water within this so-called delta zone in the years 1914, 1915 and 1916, so that they had the first failure of their crops from excessive rainfall or excessive wet conditions during those years that they had had in the period from 1887 down to 1914, whether it would have any effect upon your opinion that there was sufficient water carried away from them to account for these floods in the Bois de Sioux valley?

A. Well, of course, having seen evidence of the quantity of water that went down the Mustinka river and known of the measurements at Wheaton, and known of the quantity which must have been car-

ried down from the height of the Mustinka river at Wheaton, I conceive that the ditch system did carry down great quantities of water.

Q. I wish to add to my last question—than that was taken away from the lands in a state of nature, than came over the lands in a state of nature that is the way you understood my question,
3417 Dean Shenchon?

A. I cannot conceive, Mr. Palmer, of the new artificial transportation system for the carrying away of the water having not been very considerably effective in accomplishing that purpose.

Q. In other words, you think the rainfall was sufficiently excessive in the years 1915 and 1916 particularly in 1916 to overflow the lands within this so-called delta zone to such an extent as to cause the loss of crops such as had never been experienced before since they were settled upon and at the same time account for a sufficient excess going down this Mustinka river that would not have gone down there in a state of nature to cause these flood conditions in the Bois de Sioux valley?

A. Yes.

Q. And the same is true in a relatively less degree in 1914 and 1915?

A. Yes.

Q. I note that you assume that the ditches run down hill. What is the slope of the land in this so-called delta zone and the area tributary thereto as shown by the contour lines; I mean, in what direction is it?

A. It is falling towards the confluence of the rivers at the cut-off in a general way at the rate of about 1⅛ inches per hundred feet.

Q. Then the slope turns, as I understand it, and goes toward the south and southwest, following the course of the Mustinka river; speaking now about the waters of the delta zone?

A. Yes, sir.

Q. You would say then that the slope did not continue on from the confluence to the north and northwest and I will add,
3418 the lands to the eastward clear over to the Great Northern railroad and to the village of Norcross?

A. In the vicinity of Norcross the maximum slope is a little to the northwest, following almost parallel with the general trend of Twelve Mile Creek.

Q. Now proceed westerly to Twelve Mile Creek and tell which direction that slope continues?

A. The maximum slope is a little to the west of north, the Twelve Mile creek trending almost due north.

Q. So that the natural tendency of these waters coming from the delta zone flowing as you have stated in a state of nature slowly northerly and northwesterly is to continue on northerly and northwesterly, is it not, Dean Shenchon?

A. You mean, if the slope of the ground changes?

Q. No, if the slope of the ground remains as it is, as shown by those contour lines to be?

A. The water will take the line of least resistance in which gravity, of the coulee, is the controlling feature, except as a surface

slope is cut up with ditches. If the ditch intercepts the flow and that ditch has a gradient on its bottom or on the surface of the water in the ditch, of course there will be flow in the ditch. The fact that the maximum trend of the ground is a little west of north did not prevent the water from flowing due north in the Twelve Mile creek.

Q. Then the natural tendency is for it to continue north?

A. Until a change in the ground or the channel changes its direction.

Q. Well, is there any change in the ground from the area south from the confluence of Twelve Mile Creek and the Mustinka
3419 river over easterly, say, to the Great Northern Railway?

A. The slope is from the Great Northern Railway almost west to a little south of Charlesville.

Q. Then where is the slope?

A. Then there is a valley coming in through which the main Mustinka, the rectified Mustinka, travels towards Lake Traverse.

Q. But the natural tendency of that creek all along the line of this first Mustinka ditch—I am speaking now about the first Mustinka ditch, the direction easterly of the beginning of the cut-off, easterly of Twelve Mile creek.

A. Yes, sir.

Q. The natural slope of the ground is towards the north and somewhat towards the northwest?

A. It is almost due west as I stated before. A little north of Norcross the maximum direction is almost in the direction of the state ditch.

Q. How is it east of Norcross, I mean, west?

A. West of Norcross there is a little north trend to the line of greatest slope, a little northwest I think I said.

Q. The testimony of the residents living on the lands in that area form Twelve Mile creek easterly to Norcross is that in the years 1914, 1915 and 1916 and particularly in the summer of 1915 and the summer of 1916 and in the spring of 1917, more water flowed directly to the north through flood channels shown upon the land there than they had ever observed before during years of residence, extending from about the year 1884, this water proceeding on over into the Rabbit river, Tintah slough and the Rabbit river; that wouldn't make any difference with your opinion, I suppose?

3420 A. My opinion was made, Mr. Palmer, by going over the ground and I reached the conclusion that no considerable amount of water did reach the Rabbit river overland, that the Mustinka river and the cut-off and the rectified Mustinka took the water to Lake Traverse. That was a judgment I formed on the ground, and I examined the thing pretty carefully to see if I could find any evidence of much flow leading towards the Rabbit; you can understand the reason why I should look into that rather carefully.

Q. Did you look to see the flood channels that extend across there in very large number from the line of the First Mustinka ditch on northerly to the Rabbit river?

A. I looked very carefully and was unable to discover any evi-

dence that to my mind was at all convincing that any large flow reached the Rabbit river. I concluded that in times of high water flood conditions *at* some small portion did go across the divide and I concluded it was a very small amount and I testified so originally. Mr. Palmer.

Q. Do I understand it is your opinion that any of the water naturally flowing over into the Rabbit river then was intercepted and diverted by this ditch, Mustinka ditch?

A. No, I didn't find any evidence in the way of channels of any large flow going across the divide in a state of nature and certainly not after the cut-off ditch was constructed.

Q. Now, suppose that after the cut-off ditch was constructed in the years 1914, 1915, 1916 and 1917 in the spring very large quantities did flow to the north and northwest and into the Rabbit river?

A. My judgment is the converse and I wouldn't credit that as a fact.

3421 Q. Then, as I understand it, in your opinion you assume that less water than in a state of nature passed over to the north and northwestward in 1914, 1915, 1916 and 1917 on account of the construction of this ditch?

A. Sure, but by a very small amount.

Mr. Bronson:

Q. I don't understand what you mean by a very small amount.

A. I stated in my original testimony I couldn't find any evidence in the way of channels or the lay of the ground that would in a state of nature take any large amount of water into the Rabbit river and I explained that very fully to Mr. Palmer.

Mr. Palmer:

Q. Now, as I understand your testimony with reference to the flood conditions there in 1881, you assumed that this high water stage reached by Lake Traverse, being the same stage as the waters attained in 1916, existed in 1881 for half an hour?

A. No, I said it might have existed for half an hour and I might add it might have existed half an hour, it might have existed for a day. I don't know the length of time. A man takes the crest of a flood and makes a mark on a stone, I haven't any surrounding circumstances.

(Recess until 1:30 o'clock p. m.)

3422 February 15, 1918, at 1:30 p. m.

FRANCIS C. SHENEHON, being recalled for further cross-examination, testified as follows.

Examined by Mr. Palmer:

Q. The party making the observation and the mark has been on the stand and testified in substance that the water remained at

this highest stage for over two weeks and then very gradually went down through the summer until later in the fall it had fallen about twelve inches, the party testifying that it was on or about the 1st day of May, 1881, that the high water stage was attained. Now, in your opinion was there the same flooding of these lands in the Bois de Sioux valley during that spring that there was in 1916?

A. Assuming the same channel conditions in the upper Bois de Sioux, that portion leading from Lake Traverse down towards White Rock, I see no reason why the same quantity of water should not be discharged from Lake Traverse; but whether or not the Rabbit river conditions were such as to combine with the flow from Lake Traverse I haven't any means of knowing. I couldn't judge, therefore, entirely of the height of water in the vicinity of Fairmount; I should imagine there was a high stage of water in the vicinity of Fairmount.

Q. There is testimony here also that in 1892 during spring and early summer the water attained the same height that it attained in the summer of 1915 when these flood conditions were on. Is it your opinion that the same flood conditions existed in 1897 that existed in 1915 in the summer?

A. What time of the year was that, Mr. Plamer?

Q. That was the 1st day of April.

A. The elevation of Lake Traverse being high at the first
3423 of April or thereabouts might indicate an obstruction in the channel of the Bois de Sioux, that it wasn't flowing properly due to ice formation.

Q. I thought you said ice formation didn't make any difference?

A. In a shallow channel it would make some sifference. I was thinking or speaking of channels where we had depths of eight to twelve feet. Ice jams occur in the Mississippi. They are at present blocking the Ohio river, those ice jams.

Q. Now, the testimony shows that in the spring of 1881 again in 1897 and again in 1916, the water from the Rabbit river at its confluence with the Bois de Sioux was of sufficient volume to turn the entire current of the Bois de Sioux river to the southward and that for all the way from one to six days the Bois de Sioux flowed southward in its course south of the Rabbit river and down into the Bois de Sioux valley, south of Fairmount. Now, assuming that testimony to be true, would it make any difference with your opinion as to the waters from this Mustinka ditch having caused the flood conditions there in the spring of 1916?

A. I couldn't give credit to the testimony; I don't believe it is a fact. It may be one of those other illustrations of how water with a little velocity in an up-stream wind may appear to be running up-stream. It in my judgment is a physical impossibility that that did occur with an unobstructed channel leading out of Lake Traverse and the quantity of water what would have flowed down through that unobstructed channel at the elevation to which Lake Traverse is said to have risen.

Q. Well, I asked you to assume that testimony is true; if that was a fact, would it make any difference with your opinion in the matter?

3424 A. I can conceive of that as a fact in a case where the floods of the Rabbit river preceded a great deal in time the floods coming down through Lake Traverse, that there would be some possible backward flow, but it is difficult for me to conceive of it as a credible fact over a period of six days.

Q. Well, over a period of one or two days, until the entire Bois de Sioux valley was filled up, the waters turned then and ran north; that wouldn't make any difference with your opinion whether the waters from the delta zone caused these floods?

A. No.

Q. Assuming that, as has been shown here by the testimony, that whenever the Rabbit river is running full banks it is the dominant stream and sets back the flow of the Bois de Sioux even to such an extent as you have been willing to assume in your answer would cause to flow in the contrary direction; that wouldn't be any factor in forming your opinion here?

A. That I think would represent a state of nature and I am superimposing as you will observe upon the state of nature whatever it may be so far as the Rabbit river is concerned, this other artificial condition which created the floods which we are dealing with in 1915 and 1916. We cannot eliminate these things that are states of nature; the Wild Rice was another point.

Q. Would the fact that a considerable amount of ditching has been done in the Rabbit river so that it maintained a high stage very largely through the season of 1916 and operated as I have stated to set the waters of the Bois de Sioux river back, be any factor in forming your opinions?

Q. We threshed that out so thoroughly, I thought, in my original testimony, Mr. Palmer, that I don't think I can add anything that will illuminate that situation.

3425 Mr. Palmer: Please read the question.

(Question is read by reporter.)

A. I told you then that I felt that the ditching operations and the lessened flow over the divide from the Mustinka basin about balanced and we had substantially a flow representing a state of nature in the Rabbit river, that is my best judgment.

Q. When you stated that 2.4 feet per second of the flow in the cut-off was an absurdly low value taken by Professor Bass in his computation, what do you mean? Do you mean average velocity or maximum or minimum velocity?

A. In answering the question I understand the 2.4 to be a mean or average velocity.

Mr. Boutelle:

Q. With the water stage as given, I suppose?

A. With the ditch flowing at capacity.

Mr. Palmer:

Q. What do you assume in your answers here to be the mean or average velocity in the cut-off?

A. I stated in my direct examination that my judgment is that it is from 4½ to 5 feet per second.

Q. Will you kindly give the figures on which you base that 4½ to 5 feet average velocity?

A. The fall or drop in the water between the head of the cut-off and the foot of the cut-off is the same whether you go around the loop or through the cut-off; that is, of course, axiomatic.

Q. What is the fall?

A. The fall, I think, was taken as 5½ feet in Professor Bass's computations as I recollect it, that is, in the water surface.

3426 Q. From where to where?

A. That is from the head of the cut-off to the foot of the cut-off or from the head of the loop to the foot of the loop. One of the laws of the fall of water is that the velocity, other things being equal, will vary as the square root of the fall between two points. Since the loop is three times the length of the cut-off, the fall per mile in the cut-off is three times the fall per mile in the loop. The advantage of velocity due to this cause is then 73 per cent greater in the cut-off than it is in the old channel. Other elements enter into the condition and nature of the two channels concerned. The loop is a meandering channel, making as I have it in mind a curvature of about six complete circles in its travels from the upper end of the cut-off to the lower end of the cut-off. The nature of the river channel is one of obstruction of weeds, varying in cross-sectional area from reach to reach, and I find that the element that is known as the natural condition of the channel is only half as good for the loop as for the straightway, prismatic channel of the cut-off. The cross-sectional area of the river itself is stated variously at from 500 to 800 square feet and the cross section of the cut off is given as 400. Taking the higher value for the cross sectional area of the loop, 800 square feet, I find that the relative capacities of the loop and the cut-off are, that the cut-off has about 25 per cent greater capacity than the loop. Now, our measurements or the projection of the Geological Survey curve at Wheaton indicates that we had a flow upwards of 3,000 cubic feet per second. This appears reasonable by the contribution that is likely to be made and that engineers figure will be called upon by ditches in the 700 miles above the cut-off. If we should think of a contribution of 5 cubic feet per second per square mile, that would show us a volume of 3,500 cubic

3427 feet per second as likely to be presented for flow in the cut-off, that is, in a ditch region. Mr. John T. Stewart in a pamphlet issued by the United States Department of Agriculture Office of Experiment Station Bulletin #189, on page 23, indicates the drainage coefficient used in computing sizes of ditches, that we must count upon a discharge of 4.45 cubic feet per second per square mile of area for areas of 700 miles. I should — that this is an inter-

polation between an area of 600 miles and 800 miles. He quotes also a table on page 24 of Mr. J. P. Fanning, who was Col. Fanning a distinguished hydraulic engineer, well known in the State of Minnesota. In this table of Col. Fanning's he shows the volume of flood run-off in the Red River valley as 6.36 cubic feet per second per square mile of run-off. I should add here also that I have interpolated between an area of 600 square miles and one of 800 square miles, in taking off this quantities of flow. Using Professor Stewart's value of 4.45 for 700 square miles indicates that we may have presented for outflow 3,115 cubic feet per second and using Col. Fanning's value, which I imagine is for extreme floods, 6.36, in an area of 700 square miles would indicate 4,452 cubic feet. I understand that these values refer to regions where extensive ditching is done. The projection of the Geological Survey curve indicating that upwards of 3,000 cubic feet per second was discharged in 1916 at Wheaton appears to be reasonable. The bulk of this flow came through the cut-off ditch and through the loop of the Mustinka river. Taking the capacity of the loop as 1,500 cubic feet per second, which I believe was testified to by Professor Bass, the capacity of the cut off would be about 1,870. I stated that in my judgment it had a capacity of between 1,800 and 2,000 which would correspond to a cross sectional area of 400 and a velocity of 4½ to 5.

3428 This conclusion that a velocity of 4½ to 5 feet did exist in the cut-off comes also from my observations on the ground. Indications there indicate a high velocity, the stripping of the bottom of all fine material and the covering of the boulders and gravel and it appears to me that the velocity was fully 4½ to 5 feet per second.

Q. I wish you would give us your own figures if you have made any showing the average velocity through this cut-off, that is, showing the velocity of the flow at the head of the cut-off and over this portion which you say had a negative gradient for the first 1,800 feet or thereabouts and then showing the velocity at the next change in the gradient or bottom and then the velocity at the lower end.

A. I have computed the discharge through the cut-off using the coefficient of roughness——

Q. What coefficient of roughness?

A. "N" in Kutter's formula as .022½.

Q. That is the minimum?

A. For canals in earth in fair condition, lined with sediment and occasional patches of algæ or composed of loose gravel without vegetation. I take a hydraulic radius of 7.0 and a slope of 2,112 to the mile which gives me a velocity of 4.83. Taking the cross sectional area at 400 square feet gives me a discharge or capacity in cubic feet per second of 1932. Using the cross sectional area of 360 gives me a discharge capacity of 1,740.

Q. Have you made any personal surveys so as to know the actual bottom gradient of this cut-off ditch?

A. I made an examination of the ditch in September on the

16th day of September, measured the cross-section area and
3429 convinced myself as to the high water level at that section and I have that in mind in making these further computations. I assume that the statement made by me as to the relative carrying capacity of the loop and the Mustinka are substantially correct and that the aggregate volume of flow being upwards of 3,000 there must be a higher carrying capacity in the cut-off than indicated by Professor Bass's statement of 1,000. I have viewed the thing from several angles including this computation by Kutter's formula which I have just given you, which does take an average slope from the head of the cut-off to the foot of the cut-off, and these various methods seem within gun-shot or fairly close to reaching a conclusion that the flow was in excess of 1,600 cubic feet per second.

Q. So far as you know there has been no actual survey or accurate measurement taken of the gradient, bottom gradient, of this channel except the figures given here and the profile made by Engineer Nelson?

A. I believe Mr. Ralph made a survey of the bottom profile but it has never been in my hands.

Q. Nor have you made any use of the one made by Mr. Nelson and introduced in evidence here?

A. Well, I have not seen the exhibit made by Mr. Nelson but I had the figures from Mr. Nelson's surveys as stated in evidence by Professor Bass. The divergence between Professor Bass and myself is one of method in getting at the thing. He has divided the channel up into sections, that is, the cut-off channel up into sections, and assumed water surface levels and consequently assumed slopes and from these assumptions has reached the conclusion that 1,000 is the carrying capacity of the cut-off and his average ve-
3430 locity under those circumstances is low as compared in my judgment with what the true velocity in the cut-off channel actually was.

Q. As I understand it, you take no account of this negative gradient for this first 1,800 feet in the cut-off?

A. The negative gradient Professor Bass has just explained to me, is about .3 foot which is about 4 inches in a distance of 1,800 feet. The bottom is almost level and the gradient of the surface of the water must of course, be down-hill, the grade of flow, and I have given consideration to this profile presented by Professor Bass, or made by Mr. Nelson and the elevations taken from Professor Bass's testimony.

Q. Where did you get the 400 square feet as the average cross-section?

A. I took that from Professor Bass's figures. I took the 360 also as the last section I gave.

Q. That would be figuring the channel how wide? The average width?

A. That was 25 feet wide on the bottom, 40 feet wide on top with a depth of 11 feet. That would give a little over 360 cross-section area.

Q. You state that you attach no importance to the river channel around the loop thawing out first in the spring, do I understand you to say?

A. As bearing on the flooding of Lake Traverse, and the Bois de Sioux valley, yes.

Q. The testimony of the residents there shows that the river channel around the bend thaws out as much as two weeks earlier than the cut-off and that during the first part of the spring freshets all the water goes around the loop or overflows into Rabbit river
3431 and that that condition has obtained ever since the construction of the cut-off ditch. Would that fact affect your opinion?

A. That state of affairs could in my opinion only exist with an ice jam completely blocking the cut-off.

Q. You further assume that the channel around the bend the old river channel, is grown up with grass and weeds, as I understand it, Dean Shenehon?

A. It was in such a condition when I observed it in the past summer.

Q. Where?

A. I observed at the last inspection made of the loop, and this was at the lower end, that aside from a narrow channel in the middle there was vegetation, grass and weeds. At the extremity of the loop my recollection also points to the fact that it was grown up with weeds there. I should add also that, or repeat what I have already stated, in the evidence, that in this September 16th, 1917, inspection, there was no flow whatever in the loop, that there was some small flow, probably 10 or 15 cubic feet per second in the cut-off. At that time the cut-off was the predominant channel.

Q. Then in September, 1917, you found some vegetation growing in this old channel around the bend?

A. My impression is, I have it of the loop, as a weed and vegetation grown channel, not a clear cut channel; that is the impression that exists in my mind after visiting it a number of times. I was there in May and June and July. I might add, Mr. Palmer, that my conclusion as to the physical condition of the loop corresponds with that of Professor Bass' because we have each used in Kutter's formula the same natural coefficient?

3432 Q. Have you used the same coefficient in figuring the velocity of the cut-off that you have in the channel around the bend?

A. No, I used a coefficient showing a higher rate of flow.

Q. In the cut-off?

A. In the cut-off.

Q. What coefficient do you use in the cut-off?

A. I used .022½ where I believe Professor Bass used .028.

Q. What does "N" represent?

A. It is the natural condition of the channel. I will read you these various——

Q. I don't care about that especially Dean Shenehon, I want to know what you used as representing the amount of friction, the impediment to the flow of the water abound the bend.

A. I have given you that.

Q. What was it?

A. "N" equals .022½.

Q. What did you use in the river channel around the bend?

A. I used the same natural coefficient as used by Professor Bass which is "N" equals .035. Here is a description of that natural coefficient for the river which corroborates what I have stated.

Q. I think you have already stated that.

A. No, I have not. For canals and rivers in bad order and regimen, having the channel strewn with stone and detritus about one-third full of vegetation.

Q. But of course, what the condition of the channel was in the season of 1916, you have no personal knowledge?

3433 A. You are speaking of the loop now?

Q. Yes.

A. I conceive that to be the same condition as Professor Bass conceived it to be.

Q. The maximum carrying capacity of the loop you conceive to be what?

A. Well, I have taken 1,500 as an adjusted value.

Q. Mr. Ralph figures 1,848, I think. Will you give me your figures for the 1,500?

A. I didn't figure it. The condition is so complex I don't think any man can accurately figure that except as an adjustment between total volumes and I tried to point out how I got at that. Here is a measurement or the projection of measurement made by current meters by the Geological Survey indicating upwards of 300 cubic feet per second.

Q. In a state of nature then, the old river channel around the bend had a carrying capacity of 1,500 cubic feet per second?

A. That is the value which we used as tentative.

Q. Now, the only water then that would pass down the Mustinka river to Lake Traverse on account of this cut-off would be whatever was taken by the cut-off in excess of what would in a state of nature have gone about the bend?

A. No, I stated that the capacity of the loop itself had been somewhat increased by the lowering of the flood plane at the foot of the cut-off by the rectification of the river.

Q. How?

A. The greater slope; if you lower the level of the water at the lower end you have a greater slope through the loop and therefore a higher capacity of flow.

3434 Q. The lowering of the outlet then below the outlet of the cut-off or at the outlet of the cut-off you think would increase the carrying capacity of the channel around the bend, is that your proposition?

A. Yes, sir, slightly; I don't think that is a very large thing, but theoretically and I believe practically it did give some small increase in the flow capacity of the bend.

Q. Would the influx of the water from the cut-off at the lower

end have any retarding effect on the flow of the water that passed around the bend at that point?

A. There would be a tendency to that, yes, sir.

Q. Would that offset the slight increase in the capacity by reason of the lowering of the channel at the outlet of the cut-off?

A. I should judge by the fact that at the lower end of the loop the river has recently cut into the old original mud of the river at that point about 2 feet, so I assume there was some high velocity of late years.

Q. That is in what; in the channel around the bend?

A. In the channel around the bend, yes, sir.

Q. Then you think the channel around the bend would be at that point the dominant stream; when they were both filled to capacity; that would indicate such was the fact?

A. I have stated that in my judgment the cut-off had a carrying capacity of about 25 per cent in excess of the loop so that if the dominant stream is the one which carries the greater flow then the cut-off is the dominant stream. I also stated that in September of 1917 the water was flowing in the cut-off when none was flowing in the river, in the loop.

Q. Then, if the cut-off is the dominant stream, would its effect in setting back the flow of the water in the river channel
3435 around the bend offset any increase in the capacity of the channel around the bend by reason of lowering its outlet?

A. Yes, it would be in part. I think my conclusion that there were high velocities in the loop comes out of the fact of that scour I noticed down below that small bridge that is about 1,000 feet above the lower junction of the loop and the cut-off.

Q. Showing that there must have been a considerable quantity of water and a considerable velocity of water in the old channel around the bend in recent years?

A. Yes, sir. I am not sure, Mr. Palmer, that an additional flow in the loop is substantial enough for me to place any weight on it. I think perhaps that in less positive terms before, that it is a little thing; perhaps I am grasping as a straw there.

Q. The conclusion that I reached then from your testimony is that the present carrying capacity of the channel around the bend is about the same as it was in a state of nature?

A. It is not substantially different, I should say that was true.

Q. So that the cut-off would not increase the amount of water passing down the Mustinka river below the outlet of the cut-off except in such amount as the quantity of water arising at the confluence of the Mustinka river and the Twelve Mile creek exceeded the carrying capacity of the channel around the bend?

A. The amount of water discharging through the two channels, the cut-off and the loop would be the sum total of the Mustinka river below the junction.

Q. And if 1,500 second feet of that in a state of nature would pass around the bend it would arrive at exactly the same
3436 point whether the cut-off was there or not?

A. Sure.

Q. Then the accurate way to determine what amount of increase in volume of water into Lake Traverse that was caused by this cut-off would be to make an estimate of how much the water passing down the river, we will say, at the Wheaton bridge exceeded the capacity of the loop of the channel around the bend, would it not?

A. In time of maximum flow?

Q. Yes, in time of maximum flow?

A. Yes.

Q. You have spoken of some figures there given by Col. J. P. Fanning. This maximum run-off that he states there is for what yea. , or isn't it for any particular year?

A. This is a volume of flood run-off of the Red River valley used by Mr. Fanning in designing the capacity of ditches.

Q. What is the maximum run-off per square mile out of the Bois de Sioux river?

A. Less than one cubic foot per second. I would like to add a little to that answer. Lake Traverse, as a detaining basin, diminishes the flood run-off through the Bois de Sioux river. In the absence of Lake Traverse as a detaining basin we have a flood run-off of about 5 feet per second.

Q. Where we didn't find any detaining basin then we would find it correspondingly larger, I suppose? What is it out of the Otter Tail river?

Mr. Bronson: You have two questions there.

A. The flood run-off from the point of confluence at the head of the cut-off I estimated in 1916 to have been about 4½ cubic feet per second per square mile. The Otter Tail is a river of nat-
3437 ural detaining basins. It is a series of lakes and is a river of very even flow. I don't know the value of its run-off.

Mr. Palmer:

Q. What is it in the Red River at Fargo, per square mile?

A. I don't know. Professor Chandler can probably answer those questions.

Q. Where did you get the 3,000 cubic feet per second that you figured as the discharge at the Wheaton bridge?

A. I extended the curves made from the measurements of the discharge by the Geological Survey. This projected curve indicates for a gauge elevation of twelve feet, more accurately 11.8 feet, 3,200 cubic feet per second.

Q. Now, the testimony shows here that in this channel around the bend the river overflows on its easterly side to a considerable extent and the water rushes southwesterly through a number of flood channels that are very apparent upon the ground and reaches the Mustinka river at about the place where the cut-off comes in, and that the condition existed there in a state of nature. Have you taken into consideration that overflow in making your estimate as to the increase in the amount of the discharge at the Wheaton bridge?

A. I have taken for the loop the value of the capacity of the Mustinka derived by Professor Bass.
Q. And nothing else?
A. I didn't add to it.

Redirect examination.

By Mr. Boutelle:

Q. Dean Shenehon, I think I didn't understand thoroughly your answer to my question as to where you located the point at
3438 which you estimated the discharge of the Bois de Sioux river?
A. That was at the high bridge about two miles north of Fairmount, that is known as the high bridge.
Q. The question, Dean Shenehon, that I addressed to you had reference to computations made of the discharge made at the Great Northern bridge, were you answering with reference to that or some other point?
A. I answered as if the question were framed for the high bridge.
Q. Would there be a difference between those two points in volume of discharge?
A. Yes, I think the elevation 969 given by Professor Bass refers to a bridge further up-stream where the slope of the stream would give a little higher elevation so that the discharge of 2,000 as stated by Mr. Bass is in excess of about 450 feet over the value of the discharge as I have used it.

Recross-examination.

By Mr. Palmer:

Q. But the elevation that you assume at the high bridge of 967.5 is only an assumption?
A. It is the crest line of the flood indicated by lines left on the cylinder piers at the bridge.
Q. When did you find those there?
A. That is on my first visit in May 1917 and again in June. They are clearly marked and the elevation of the water there at the flood crest of 1916, is corroborated and confirmed by other drift observations made by me.
Q. Did you make that at the Great Northern bridge or at the high bridge?
3439 A. This is at the high bridge. Professor Bass and myself agree fairly well on the discharge out of Lake Traverse but he seems to have gotten a higher discharge by the time he reached the Great Northern bridge that I have not been able to understand.

W. R. POWRIE, being sworn in behalf of complainant testified as follows:

Examined by Mr. Boutelle:

Q. Mr. Powrie, you are one the engineers of maintenance of the Chicago, Milwaukee and St. Paul Railroad?

A. Yes, sir.
Q. And you have occupied that position how long?
A. Four years at Minneapolis.
Q. And previous to that time?
A. I was in Milwaukee and out on the Coast line.
Q. You were here during the spring of 1916 in your present position?
A. Yes, sir.
Q. The line of road or branch line of road which crosses the Mustinka channel near Wheaton, is a part of your division?
A. Yes, sir.
Q. Were you on the ground during the high water of 1916, the spring of 1916?
A. Yes, sir.
Q. Do you recall the date that you were there?
3440 A. I was at the crossing of the Mustinka river on March 30th.
Q. 1916?
A. 1916.
Q. Will you tell us if you observed the height of the water on that day with reference to the structure of your railroad bridge there?
A. Yes, sir, I did.
Q. What was it?
A. It was three inches below the caps on the piles of the bridge, below the top of the caps.
Q. The bridge that was there at that time is still there?
A. Yes, sir.

Cross-examination.

By Mr. Palmer:

Q. The piles are what support the bridge, the large round timbers driven into the ground?
A. Yes, sir.
Q. And then there is a cap put on top of those?
A. Yes, sir.
Q. Of what thickness, Mr. Powrie?
A. 12 inches thick usually.
Q. Do those caps take the place of ties in supporting the rails?
A. No, sir, they caps support the stringer and the stringer supports the ties.
Q. The rails?
A. The stringers support the ties, and the ties support the
3441 rails.
Q. You say the cap is 12 inches and then the stringer is what width?
A. The stringer is 18 inches.
Q. Thick you mean?
A. In height usually. We used some 18 and some 16.
Q. What do you use there?
A. I don't know. I am not sure whether it is 18 or 16 there?

Q. Then the ties are what thickness?

A. They are 6 inches sometimes, I think they are 8 inches, they are 8 x 8.

Q. You say the water did not come within three inches of the top of the caps?

A. Three inches below the top of the caps, yes, sir.

Q. So it was how far from the rails?

A. Well, roughly it was two feet, and three inches below the rails.

Q. Was the water flowing with sufficient velocity at any time that season to impair your bridge?

A. The water was quite swift through the bridge, yes, sir. It didn't impair the bridge in any way, but it washed the embankment slightly at the north end of the bridge.

Q. How long do you say you have been with the Milwaukee Company?

A. I have been with them 20 years.

Q. Well, as their engineer?

A. Yes, but I have only been in this territory since the fall of 1913.

Q. Did you observe that condition there any time previous to the spring of 1916?

3442 A. No, sir.

Q. Or any trouble there at all?

A. No, sir.

Q. Did you have that condition at any time during 1916 except on or about the 30th of March?

A. No, sir. Well, we didn't have any trouble with the track. I can't say whether the water was up to that height later in the season or not but I don't think it was.

Q. How long did that condition exist there, do you know?

A. Why, the water was up there for quite a while, but I don't think it was up to that high water mark that I had given very many days, but I can't tell you how many. .

Q. Did the water dam up some there at the bridge, and westerly of the bridge?

A. It dammed up a little at the bridge and northerly from the bridge; the track runs about north and south.

Q. And about how far northerly and northwesterly, — isn't it?

A. Well, maybe a little west of north.

Q. — of the bridge did the water dam up a considerable extent?

A. Well, the—I can't tell you—it dammed up along the track there for probably a mile or more north of the bridge.

Q. Did it break through in one place northwesterly of your bridge there?

A. Yes.

Q. And washed out considerable of the track?

A. Yes, it washed out about three hundred or four hundred feet of the track, I think five hundred feet.

3443 Q. How long did the high water conditions stay up over there northwesterly of the track?

A. Well, I don't know, it all went—it was all about the same elevation both at the river and north of the track.

Q. How far northwesterly of the bridge is that point where the 400 or 500 fet of track had washed out?

A. As I recall it, it is about 1,800 feet.

Q. Is it where you put in a culvert? To accommodate the flow of the water later on?

A. We had a culvert and we put in a bridge.

Q. You put in a bridge at that point?

A. Yes, sir.

Q. So it is now marked by a bridge or trestle?

A. Yes, sir.

Q. And the water that flows through that bridge that you put in northwest of the bridge crossing the river proper, where does that go?

A. Why, it flows across the highway and I think back into the river on the west side of the track. I don't know, but it appeared to me to be going that way.

Q. You don't know whether it does that or has an independent channel?

A. No, sir, I don't know it.

Q. You say this dammed up condition of the water extended half a mile or so northwesterly?

A. I think so, yes.

Q. And did it fill up a considerable area westerly of the river and northerly, northeasterly?

A. Well, the track runs about north and south and the river east and west. All the territory north of the river and east of the
3444 track was under water as far as I could see.

Q. As far as you could see to the east?

A. To the east, yes, sir.

Q. But westerly of the river channel?

A. North of the river channel.

Q. That condition extended for several miles to the northeastward?

A. I don't know how far back from the track it extended. It didn't extend—it extended less than a mile, I think, along the track.

Q. How long did that flooded condition in there exist, do you think?

A. I don't know.

Q. That you didn't observe?

A. No.

Q. Had you ever had any flooded condition in there before 1916?

A. Our men up there say they had. Of course, I never saw it.

Q. Probably every spring, would you say?

A. No, I wouldn't say.

Q. Did you observe any of the condition there in 1915, Mr. Powrie?

A. No, I wasn't up there in 1915.

Q. So I take it you are unable to say whether it was and unusual situation or not, so far as your personal knowledge is concerned?

A. Well, I think I can say we didn't have it. I didn't observe it but we didn't have any trouble there, if we had had any trouble with the track I would have known of it.

3445 Q. But did you have any knowledge of this territory at all prior to 1913?

A. No, no personal knowledge.

Redirect examination.

By Mr. Boutelle:

Q. At the time you observed the water at the level you stated there did you notice the level of how the water stood with reference to the wagon bridge right near your bridge?

A. Yes, sir, it was over the floor.

Q. Over the floor of the bridge?

A. Yes, sir, over the floor of the bridge.

3446 E. F. CHANDLER, being recalled in behalf of complainant, testified as follows.

Examined by Mr. Boutelle:

Q. Have you computed the discharge of the Bois de Sioux river with reference to the water levels during this flood condition that we are dealing with at the Great Northern bridge?

A. Approximately, as nearly as I could compute from such information as we could obtain concerning the slope of the water surface.

Q. And with what result?

A. From those I could deduce an average velocity of the highest flood stage of only about two feet per second.

Q. What did that give you, your total discharge?

A. And the total discharge of about 1,400 cubic feet per second.

Q. You heard the testimony of Professor Bass given in this case in regard to the relative discharge capacity of the old channel around the loop and the cut-off?

A. Yes, sir.

Q. And the testimony of the velocity with respect to the cut-off 2.4; what will you say in your opinion as to the accuracy of those computations?

A. So far as I was able to compute from my own observations of the stream and of the two channels and from the known difference of elevation at the ends, I computed that the velocity of flood stage in the cut off should be about three times the velocity in the loop.

Q. Assuming that the velocity of the original channel then was computed on a 1.6 basis and that that approximated a correct

3447 estimate, what would you give for the velocity of the cut-off?

A. About 4.8 or between 4½ and 5, and I figured this by comparison with the loop in order to corroborate the values which I had already computed for the cut-off independently by Kutter's formula and it made a very neat corroboration.

Q. As the result of those computations what will you say with respect to Professor Bass's testimony that the carrying or discharge capacity of the loop exceeded that of the cut-off?

A. So far as I can compute that, as accurately as I can compute it, I found the carrying capacity of the cut-off to be between 1,600 and 2,000 cubic feet per second, that of the loop between 1,000 and 1,500 cubic feet per second depending to some extend on what assumptions were made as to coefficients. In either case the cut-off capacity is one and a half that of the loop or thereabouts.

Q. In determining this question of the discharge capacity the levels of the water I assume is an importance factor?

A. Yes, sir, it is.

Q. I will ask you to state as to whether or no the methods testified to by Professor Bass of starting with an assumed elevation at the confluence of Twelve Mile creek and original channel and running back a gradient line to the confluence of the cut-off and Twelve Mile creek involved purely arbitrary assumptions?

A. Largely so, but if no evidence whatsoever was obtainable concerning the actual height, if it was an unsettled country then there would be no other basis upon which to make assumptions.

Q. Were there indications on the ground at the time you investigated from which you could determine and approximation of
3448 the high water mark during this flood period?

A. At what point?

Q. At the mouth of the cut-off.

A. Not that I could quote definitely, it had overflowed at some points, apparently but nothing I could give evidence to definitely.

Q. Do you recall in your estimation of the capacity of the cut-off what elevation you assumed for the waters at the point of confluence between the cut-off and Twelve Mile creek?

A. A sufficient elevation so as to give the water through the cut-off a depth of from ten to twelve feet along its length; this allowing for irregularities in the bottom, this two feet.

Q. What will you say, Professor Chandler as to the emphasis that has been laid upon this so-termed negative gradient for the first 1,800 feet of this cut-off in estimating velocity?

A. The negative gradient, from the best information that I could get, including the profile submitted by surveys by Mr. Nelson, amounted to reducing at some points the effective depth of the water about one foot.

Q. And what practical effort would that have on the matter of velocity assuming that the water was from 10 to 12 feet deep?

A. It would slightly reduce the velocity.

Q. Would that reduction be appreciable or inappreciable from a practical standpoint?

A. If the reduction had been 1 foot in depth, through the whole length of the cut-off it would make approximately a five per cent reduction in velocity. If it was only a reduction of one foot through certain limited sections of the cut-off it would be correspond-
3449 ingly less than five per cent.

Q. There has been some considerable reference in the record here, Professor Chandler, to the fact that the cut-off channel was frozen up and would cease or was not functioning at the time the

original channels were clear. From your investigations are you able to express any opinion as to the importance of that in this case?

A. In general it can be stated that two parallel streams almost never open at the same instant, one or the other is likely to open first. In such case as this I should have no reason to make any prediction which would be the first to open. In this case one is obstructed or clogged to a considerable extent by the weeds and has many turns so that the ice, when the ice begins to go out, is more likely to jam than in a straight channel. The other channel is straight so that when it does start the water has a straight shoot. The sun light would fall into the bottom in this latitude at the end of March, would fall into the bottom of an east and west channel from sunrise until sunset. A north and south channel would be in the morning and evening the bottom would be in the shade. Professor Bass in his direct evidence spoke of that and I thought it was a slip of his attention from thinking of streets where there are vertical walls. The north and south streets get the sun light more than the east and west streets in the spring.

Q. You heard the testimony of Professor Bass to the effect that by comparison of the precipitation in 1915 and 1916 with that of 1916 and 1917 the excess was something like 25 per cent, and following this up with the assumption that the normal channel capacity of the river at about 1,500 second feet and that the readings at Wheaton show an excess over this amount of about 50 feet. He claims
3450 that a liberal allowance to be allowed from the increase precipitation would be 50 per cent in those cases? What will you say of such computations as that?

A. In the first place, the allowance for excess run-off should be made as an increase in the total run-off, not an increase in some particular portion that overflowed some known or assumed channel. In the second place, it is reasonably to be expected that a 25 per cent increase in precipitation usually subject to many other conditions would cause much more than 50 per cent increase run-off. If all the rainfall flowed into the stream the increase in run-off would be exactly the same as the increase in precipitation but in this country not more than one twentieth one tenth or one fifth of the rainfall ever reaches the streams. Therefore the increase in run-off is likely to be five or ten or sometimes even twenty times as great as the increase in precipitation in proportion—the percentage increase is likely to be. The records from the Red River valley Station show this.

Q. So that, if any estimates were made upon the application or by the application of this liberal allowance or the increase of the excess in its effect upon the waters of Lake Traverse, what will you say as to that?

A. The increase in run-off, whatever percentage, 50 per cent or whatever per cent was adopted, should be that per cent of the 15.50 second feet, not that per cent of the 50 second feet, which was so-called excess, over channel capacity, and the fifty per cent increase would have made, even on these assumptions would have made an

excess flow of 780 second feet instead of 90 second feet, even taking only a 50 per cent increase.

3451 Q. It has been stated here in a number of instances in the testimony of the defendant that where a ditch or artificial construction like a ditch is overflowed it ceases to function. What will you say with reference to that?

A. If the natural slope of the country were exactly the same as the direction of the ditch I am unable to see how the fact that the ditch is more than full would have any effect whatsoever, would have any result on the flow in the ditch except that it would be still further accelerated because of the greater depth. If the country slopes to a slight extent obliquely the ditch will still be carrying as much water as though not overflowing but the slopping over the sides is that much extra.

Cross-examination.

Mr. Palmer:

Q. That is, if this water was rushing northward following the natural slope of the ground and with considerable velocity, covered the ditch in question, that is, the east and west portion of it, to a depth, we will say, of a foot and the waters continued on in their northerly sweep, the ditch would still be carrying westerly the same quantity of water that it would if there were not any water whatever passing over the top of it and passing on at right angles to its slope.

A. Is this a hypothetical question or one referring to the Mustinka ditch?

Q. I took it that the question might be assumed to refer to the case that we have in hand.

A. I haven't heard any evidence concerning the case at hand where the natural flow of the waters across the ditch was

3452 in a north and south direction. The case that I had in mind was the upper Mustinka ditch or Old Mustinka ditch where according to the contours of the map submitted it was my impression that the natural slope of the country differed by not more than twenty to thirty degrees from the direction of the ditch. If the natural slope of the country was north I fail to see how the ditch could carry water under any circumstances because it would have no fall.

Q. Then if the slope, we will say, varied 30 per cent, the slope of the land, from the direction of the ditch and the ditch was filled with water and perhaps, we will say, about one foot of water over the top of it, those waters following the slope of the land you think the ditch would still be functioning, carrying water to the westerly as much so as though the presence of the flood waters was not?

A. It would carry somewhat more water than if it were not overflowed because it would have the same fall per mile that it had before it was overflowed and a slightly greater depth.

Q. The passage of the water then over the top of the water in the ditch and rushing in a direction varying at least 30 degrees from it, would have no retarding effect on it then?

A. The water passing over the top of the ditch would have a very small velocity because of its slight depth and the fact that it has been coming through grass or over prairie surface, grass or weeds. If the ditch is cleaned out with a greater depth the velocity in the ditch will be several times or many times that of the water passing over the surface. The retarding effect on a dam, I should say would not be great enough to off-set the increased velocity in the ditch on account of its greater depth.

3453 Q. The testimony is here, Professor Chandler, that taking this territory beginning with the source of this cut-off ditch and extending easterly clear to the Great Northern Railway, the waters in times of high water rushed northerly, very slightly northwesterly, in great volume and with considerable velocity and that they have cut out and created there numerous flood channels that are plainly discernible upon the ground and that more water rushed to the north and northwesterly there in the springs of 1915 and 1916 and 1917 than ever went there before. Notwithstanding that testimony you say that this old Mustinka ditch which had been in there for twenty years in a bad state of repair, running west at right angles with the flow of the water carries just as much water as it ever did to the west?

A. In view of the fact that the old Mustinka ditch nearly follows the original channel of the Mustinka river I am unable to believe that the slope of the country is really in any direction except approximately in the direction of the old Mustinka channel, in other words, nearly west, and I think this evidence must have been given under some misapprehension with the effect of violent wind storms.

Q. Now, Professor Chandler, you stated that you assumed that this old Mustinka ditch follows the course of the Mustinka river?

A. Approximately.

Q. The course of the Mustinka river after the first three miles west, of the Great Northern railway is northwest isn't it?

A. It is west, northwest.

Q. West, northwest; and this ditch is directly west?

3454 A. Yes, sir, the old Mustinka river diverges at an angle of about thirty degrees from the ditch.

Q. And you think that the water rushing over the top of it and rushing on to the northwestward, that it would not retard the flow of the water there in the ditch to the west at all?

A. The water rushing over would be going partially westward, or directly across the ditch unless the old Mustinka river managed to run up hill. If the old Mustinka river shows the original contours of the ground, gives any indication of the original contours of the ground, I think it would not retard the flow of the water in the ditch.

Q. The testimony appears to be undisputed here that old Mustinka river in the direction that it did flow through all of that area that I have described had not sufficient velocity to cut a channel even; the whole tendency of the water was to flow away to the north and northwesterly, cut new channels over into the Rabbit river. Did you look over that territory so that you know anything about where the water naturally goes there?

A. Not sufficiently to give figures concerning the channel.

Q. Now, assuming that after the construction of this compiete ditch both the old portion and the new, the waters continued to flow northerly and northwesterly and into the Rabbit river, Professor Chandler in just as great volumes as it did in a state of nature, or greater; would you still say that the effect of this ditch would account entirely for the increased volume of water that you found going down the Mustinka river at the Wheaton bridge in 1915 and 1916?

A. If the opening of ditches has given a better outlet
3455 and increased carrying capacity for the water courses in that region it would unquestionably intensify and aggrevate the floods and to some extent increase the total amount of water brought down.

Q. Now, you based part of your answer upon these other ditches, County ditches, that extend east and west across the so-called delta zone and westerly of it have you not?

A. I have been considering the area as a whole, yes, sir, and it is ditched by County ditches, I suppose they are County ditches, partly.

Q. Now, the direction of the flow of Twelve Mile creek is almost directly north and south, isn't it?

A. Yes.

Q. And the five mile creek the same?

A. Five mile Creek would be north, northwest.

Q. So that these ditches all run practically at right angles with those streams?

A. Yes, sir.

Q. Now, do I understand it to be your opinion that these ditches function just as well in carrying off water from those lands as though they followed the course of the natural stream and the slope of the ground?

A. If it had been the intention to build ditches that would carry off water with the greatest possible speed they would have been built directly down the slope of the ground but they will bring it faster than if there were no ditches there at all.

Q. Wouldn't the natural tendency be to collect the waters in the ditches and in that manner dispose of them without their
3456 reaching the Mustinka river below its junction with the cut-off ditch?

A. It is impossible to answer that question definitely unless it is known whether the ditches have any fall. If the ditches have no fall whatsoever they would collect the water and hold it there for a longer time perhaps for a longer or shorter time than would occur if the water was on the surface of the ground.

Q. Now, it appears here in testimony that more water stood upon the land in the delta zone during the years 1915 and 1916 than ever stood there before to the knowledge of any one living in that locality, Professor Chandler, how do you account for that?

A. The cumulative excess rainfall for the years 1914, 1915 and 1916, I believe those are the dates that have been given in the defendants exhibits was some sixteen inches or thereabouts; in other words, a succession of wet seasons.

Q. And you wouldn't think from that testimony that these ditches operated as fully as has been assumed here that they did in carrying water off of that territory during those seasons?

A. Unless I have definite information concerning the slope of the ditches as to whether they had no fall or a slight fall or much fall I wouldn't make any assumption of any sort.

Q. It is testified here by the residents in the locality immediately adjacent to this Mustinka river around the bend, as it is called, or loop, that the same volume of water passed around there in the springs of 1915, 1916 and 1917, as in a state of nature and particularly, that in the spring of 1917, and 1916, the waters overflowed in great
3457 quantities and with great velocity to the north in the bend, and to the Rabbit river. How do you explain that upon the theory that this cut-off ditch diverted any of those waters to the westward?

A. If this were true it could be explained on the supposition that the natural run off of the drainage area for that particular year or years was greater than had occurred in the previous few years of less precipitation.

Q. It could all be explained upon the ground of excessive precipitation?

A. All of which?

Q. The excessive water there?

A. It might be that the ditching had brought more water than had previously occurred, the ditching above this point. It might be it was simply the result of excessive precipitation; it would depend upon the further set of conditions.

Q. Now, Professor Chandler, it appears here in testimony, that in its passage around this bend the water overflows not only to the north and into the Rabbit river but southwesterly and runs across the peninsula formed by this loop in such quantities that it has cut out very well defined flood channels across to the Mustinka river at its point of juncture with the cut-off. Do you take that into consideration in estimating the increase of the flow of water at the Wheaton bridge?

A. I have not taken that into consideration because it has not been before suggested that anything of this sort had occurred, any new channels of this sort had been eroded within the past two years.

Q. The testimony is not that they are new channels eroded
3458 within the past few years but that they existed there from the time the territory was first known and that the water has passed through them in considerable quantities in the past three years and since the construction of this cut-off ditch. Those would account, wouldn't they, to a considerable extent for the increased volume of water we find at the Wheaton bridge?

A. If they have existed for years they wouldn't cause any increase now.

Q. But they would account for a part of the flow of water there apart from this cut-off channel?

A. They would account for a part of the total flow but not for any part of the increase in flow.

Q. What do you say is the carrying capacity of the river around the bend?

A. My estimate, including such little channels of this sort, as I assume probably existed to carry a small amount of overflow, was from 1,000 to 1,500 cubic feet per second.

Q. Now, with the overflow in these flood channels that I last described, assuming that it was 15 cubic feet per second, a somewhat accurate estimate of the increase amount at the Wheaton bridge by reason of the cut-off could be made by the amount there found compared with the 1,500 cubic feet per second which the old channel would take around the bend in a state of nature?

A. Subject to this correction, that with the cut-off in existence 1,500 cubic feet per second could come down the cut-off and the loop combined without rising to as great a height or overflowing over the country as much as though it were obliged to run around the old channel, but an approximation could be made that way.

Q. And you say you figured the carrying capacity of the cut-off ditch from 1,600 to 2,000 cubic feet per second?

3459 A. Yes, sir.

Q. Now in figuring the velocity in the cut-off did you assume a uniform gradient for the bottom?

A. If I recollect right the first time that I figured that, some six or eight months ago, I assumed a uniform gradient for the bottom and uniform slope for the top of the water and obtained something more than 2,000 cubic feet per second. Subsequently on hearing that there were slight irregularities in a gradient of the bottom I reduced the figures to allow for the somewhat diminished cross section at the highest point of the bottom above a uniform gradient, reducing it to 1,700 or 1,800 cubic feet per second, between 1,700 and 2,000.

Q. You say that the assumption of Professor Bass of 998.5 at the juncture of the old Mustinka with Twelve Mile creek and figuring back and getting an elevation of 1,002.1 at the mouth of the cut-off would be allowable if the country was unsettled and there was no other source from which to obtain it?

A. Yes, sir. If there is no other information obtainable that would be the best possible method.

Q. Did you obtain any better information than that?

A. At the time, in June, 1917, that I was through that region some of the residents there told me, although I cannot quote their names, I didn't inquire their names, that the ditch overflowed slightly.

Q. What ditch?

A. The cut-off, at various points along its length. On that basis such measurements as I made gave a depth of about twelve feet at every point that I happened to measure.

Q. That is, where you got your elevation was asssuming the water depth through the channel of twelve feet?

3460 A. That was on my preliminary computation, yes, sir. It was rough measurements, not accurate levels.

Q. But you were not there where the water was anywheres near the top of the ditch?

A. No, but from the bottom of the ditch to the top of the bank at those points, at every point I measured, it would have taken from 11½ to 13 feet depth of water to cause the water to overflow?

Q. And that was based upon some statement that was made to you?

A. Yes, sir.

Q. The testimony seems to be that it was at no time more than within a foot of the top; your informant has not been on the stand, I take it?

A. I don't know.

Q. I don't know that I understand your statement of the erroneous character of Professor Bass's computation in figuring the increased run-off on account of the increase of 25 per cent in precipitation. Will you kindly explain that?

A. He assumed first that a 25 per cent increase in precipitation would cause an increase in run-off of only 50 per cent. This estimate for this region is unreasonably small; it would probably cause an increase much greater.

Mr. Boutelle:

Q. Well how much greater?

A. The increase in run-off is likely although not certain to be some five to ten times the percentage increase in precipitation, possibly even more, and secondly he applies this 50 per cent increase not to the run-off which was as I recollect it assumed to be 1,550 second feet, he applies it merely to the 50 second feet, which he calls the excess above the capacity of the old channel. So that his
3461 50 per cent increase was not applied to the run-off but merely to a small section of the run-off.

Mr. Palmer:

Q. You understand, do you not, that he was figuring the excess of water taken by this cut-off over that which would have passed around the bend in a state of nature?

A. I understand that was his purpose in figuring that. That hasn't anything to do with the amount of water that tries to run-off of the land if it can find a channel.

Q. It might have considerable to do, however, with the amount that is brought down the Mustinka channel and appeared at the Wheaton bridge.

A. The capacity of the channel at the cut-off and the loop would be the controlling factor in the amount of water appearing at the Wheaton bridge but not in the amount of total annual run-off.

Q. Why do you say that the increase in the run off would be five to 10 times the increase in percentage of precipitation?

A. On the basis of records that have been made, that have been kept of the streams in the Red river valley and northern prairies for

the past 15 or 20 years, and the records of run offs as compared with the records of precipitation by the weather bureau.

Q. Can you give *you* me an instance or illustration of that in this vicinity?

A. I can give an illustration of that further down the river at Grand Forks, where there is 36 years records.

Q. Can you give me one at Wahpeton?

A. No continuous records have been kept at Wahpeton.

Q. I want to go back for a moment to your proposition
3462 that the overflowing of a ditch would not effect the carrying capacity. I take it that the velocity of flow is governed by the hydraulic gradient?

A. The hydraulic gradient, the hydraulic radius and the rugosity or roughness of the sides of the channel.

Q. Then the hydraulic gradient is the factor?

A. It is one of the factors.

Q. And assuming that the other factors remain the same, isn't the hydraulic gradient of water less when the ditch is overflowed than when it is not?

A. For the water in the ditch, the ditch itself would have the same slope from east to west, the water surface above the ditch the same slope from east to west or thereabouts that it had before it was overflowed, therefore the velocity would be approximately the same.

Q. And if the ditch did overflow that fact is evidence that the outlet of the ditch is not sufficient to carry away the discharge, of course?

A. In one sense, not necessary that the outlet is not sufficient, it may be that the water is being fed into the ditch in small streams at irregular points. Yes, you are correct, the capacity is exceeded.

Q. If the capacity is exceeded so that the outlet does not carry the water away, then the level of the water in the outlet would rise?

A. It is not that the outlet is insufficient, it is not that the ditch itself is dammed but that the ditch the whole length of the ditch is insufficient, there will be the same slope down the length of the ditch as before.

Q. And if the level of the water at the outlet or all along
3463 the ditch as you speak of it, rises then the hydraulic gradient is less?

A. Not unless it rises more at the lower end than at the upper.

Q. If it did not rise at the lower end there wouldn't be any flood there, Professor Chandler, there couldn't be?

A. In such a case as I understand the case you are putting before me, the whole length of the ditch is overflowed or approximately the whole length, so that the surface of the water in the ditch is slightly above the surface of the surrounding ground. The hydraulic gradient in the ditch would then — the same as the hydraulic gradient would be if it lacked one foot of being level with the top of the ground. Or substantially would be the same as previously.

Q. And the fact that the ditch overflowed would be no evidence

that the water had risen at the outlet and that the outlet was insufficient to take it away, as I understand your proposition?

A. No, it would be my idea it would be evidence that the ditch as a whole would be insufficient to take the water.

Q. The fact that the ditch overflowed is due to the fact that its outlet is not sufficient to take the water away?

A. It is due to the fact that the ditch as a whole, that its hydraulic gradient is not sufficient to take the water away; whether the point of minimum capacity in comparison with the water entering it comes at the outlet or further up would depend upon what point the water enters. If the ditch is built with uniform cross section for a mile or more, as is often the case, it would probably be the lower end or near the lower end.

3464 Q. And you don't mean to say that the hydraulic gradient is the same—the discharging capacity is the same at the lower end in every case when the ditch is overflowed than when it is not overflowed?

A. There are two interpretations of the word overflowing and I perhaps misunderstood some of your previous questions. If the country was covered with water so to speak like a lake, as a continuous sheet of standing water, the outlet of the ditch closed up and damming the whole country, covered with water nearly standing, then the ditch would not be functioning. The idea that came to my mind when you were speaking of it was as of such cases as I have seen that the water is trickling in over the sides of the ditch every few rods more than the ditch will carry, coming through a few inches deep off the fields and prairie, and running out at the other side as well as lengthwise of the ditch.

Q. I ask you to assume a case where there was a sheet of water that extended to a considerable depth over the top of that ditch that was full and going on as you say a- 30 per cent in the other direction. Do you say the carrying capacity of the ditch is a- great and it had the same hydraulic gradient as though it was not overflowing.

A. To imagine a continuous lake of that sort was a different question perhaps from what I was answering. If the ditch was laid out as I infer that it would be done by an engineer with some slope downwards, then you could hardly have a level sheet of water in that case. If it was a perfectly level sheet of water as high above sea level as the lower end of the ditch as the upper end of the ditch, the ditch would not be flowing at all, it would not function.

3465 Redirect examination:

By Mr. Boutelle:

Q. Professor Chandler, is there any general rule applied where two streams cross each other at right angles with respect to the effect of that crossing on the flow?

A. If the streams have a very great velocity or a large velocity one of them can obstruct the other very materially. If one of them has a shallow channel, and comes into another one, goes into the

side of another one, with a deep channel, it often appears as though the tributary stream obstructed the deep stream because the debris and drift in the shallow stream flows across the surface of the deeper stream. That is something that I have often seen, as for example, at Grand Forks. But if the velocities do not exceed more than two, or three or four feet, a second the water in one stream would be stopped entirely, turn a right angle, go in any direction, with a loss of head not exceeding a fraction of an inch, of an inch or two inches.

Q. When the waters in Bois de Sioux valley were spread out as the evidence disclose that they were spread out in this case, over some several miles, did the Bois de Sioux river cease to function?

A. The flow down the Bois de Sioux river would be the same, would have the same velocity, or probably somewhat greater velocity, than if the water was not so high. There would also be over the flood plane water flowing with a very small velocity, a few feet or a few rods per hour. The river itself would function the same as previously, provided the overflowing was caused by reason of the excessive amount of water discharged into the river. If the overflow was caused by damming or obstruction so that the slope
3466 down the valley became less than formerly then for that same reason the velocity in the river would be less than formerly.

Q. My question and the question I wanted to ask you was this: When the Bois de Sioux river was overflowed so that the water spread out over the valley, did the Bois de Sioux river cease to function?

A. It functioned the same as usual except that the hydraulic gradient might have been slightly less because below Fairmount the channel is slightly narrower so that a 5-*feet* rise at the high bridge was probably necessary in order to carry the same amount of water that was carried by a three-*feet* rise at Lake Traverse. Therefore, the hydraulic gradient would be reduced in that proportion and the velocity would be reduced in the square root of that proportion.

Q. It has been suggested, Professor Chandler, that the so-termed flooding condition in the area which we will term the area of confluence that has been described here, *but* solely due to conditions of precipitation. I will ask you to state whether or no in your opinion that is a fact or whether it is due very largely to the artificial construction, both by the original ditch and the auxiliary construction of the various ditches.

A. It would — due to a combination of these two; without precipitation there would be no flooding. The run-off coming originally from the precipitation *in* brought down more quickly by reason of the increased channel capacity and therefore either may be stated to be the sole cause of the flooding or to increased flooding which may have occurred but to a less extent from the precipitation.

3467 Recross-examination.

By Mr. Palmer:

Q. Of course, the overflow of waters in the Bois de Sioux valley are flowing in exactly the same direction as the river, in that case?

A. Yes, sir.

Q. And not in any angle to it at all; and even then as the flood plane filled up above this point of the steep banks north of Fairmount, the hydraulic gradient would become less and then the proportion that you have more than the river would cease to function, Professor Chandler?

A. Yes, I would not myself say that the river cease- to function. I would say it functioned less effectively.

Q. There has been testimony here that the Rabbit river when -rimming full banks in the spring, left its channel just before reaching the Bois de Sioux and ran to the southwesterly and into the Bois de Sioux from that direction and turned the current of the Bois de Sioux to the southward, back to a point south of Fairmount. In that case the Bois de Sioux river would certainly cease to function as far as carrying any water to the northerly is concerned and would account for the flooding there of the Bois de Sioux, would it not?

A. Unless the flow in the Rabbit was so great as to raise the water in the Bois de Sioux river at the mouth of the Rabbit river, to an elevation equal to that of the Bois de Sioux river at White Rock it could not cause water to flow back as far as that. If a sudden flood came down the Rabbit river during the crest of the
3468 flood for a few hours before the flood came down the Bois de Sioux, it might very readily for a few hours cause backwater. I should not expect it for a long time, however.

(Recess is taken until 10:00 a. m., February 16, 1918.)

February 16, 1918, at 10 a. m.

GEORGE A. RALPH, being recalled in behalf of complainant, testified as follows.

Examined by Mr. Boutelle:

Q. Mr. Ralph, since you were previously called as a witness in this case, have you made any further measurements on the ground?

A. Yes, sir.

Q. And from those measurements have you caused to be prepared a plat?

A. Yes, sir.

(Complainant's Exhibit 49 is marked).

Q. Calling your attention to what is marked, Complainant's Exhibit No. 49; is that the plat that you have prepared?

A. Yes, sir.

Q. And is that made from measurements taken by you on the ground?

A. Yes, sir.

Q. And accurately prepared from your data?

A. Yes, sir.

3469 Q. There has been a considerable amount of testimony in this case, Mr. Ralph to the effect that the original ditch and the cut-off intersect Twelve Mile creek at substantially right angles. I wish to call your attention to the first diagram shown in the upper right hand corner of the plat Exhibit 49, and ask you if that shows accurately the line of the stream flow and the intersection of the ditches with Twelve Mile Creek?

A. Yes, sir, it does.

Q. Are the points of the compass in accordance with the diagram on the map substantially, the top of the map north and south?

A. Yes, sir.

Q. Calling your attention to the portion of the diagram south of what appears as the ditch, in the center of what is marked "Twelve Mile Creek", I see certain straight lines, or in substantially the center, what do those indicate?

A. Those are lines that I ran for the purpose of drawing the map. They are run on the ground, measured, taking the angle and the distance.

Q. On the northerly side of what appears on this diagram to be the old Mustinka ditch and the new Mustinka ditch, there appears a bridge marked "A". What is that?

A. It is a bridge over Twelve Mile creek.

Q. Now, calling your attention to a diagram in the right hand lower corner of Exhibit 49, I will ask you if that shows a cross section of the stream at the bridge at that point, marked "A"?

A. Yes, sir; that shows a cross section, of the stream at the bridge.

3470 Q. And have you computed the discharge with reference to the cross sectional area shown there of that outlet under the bridge, substantially?

A. Yes, sir.

Q. And are your computations shown on the plat, I mean, the result?

A. Yes, sir.

Q. I believe you were on the ground during the stages of flood water in 1916, weren't you, Mr. Ralph?

A. Yes, sir.

Q. At that time, did you observe the level of the waters as compared with the level of this bridge north of the ditch?

A. Yes, sir.

Q. Are you able to state at this time as to the height of water surface at that flood stage with reference to the floor of the bridge?

A. It was approximately a foot and a half above the floor.

Q. Calling your attention to a diagram on plat, Exhibit 49, just to the left of those two, to which attention is called, the particular

diagram being marked here: "Cross section of Mustinka state Ditch at point marked 'B';" what is that, Mr. Ralph?

A. That is a cross section of the cut-off channel at a point about 400 feet west of the confluence of Twelve Mile Creek with the cut-off channel.

Q. And is the point where that cross section was taken indicated on the diagram of the ditch above?

A. Yes, sir.

3471 Q. Will you state your reason, if any, for taking the cross sectional area at that particular point?

A. That in my judgment was the point of control of the flood waters flowing through the cut-off channel?

Q. And why do you say it was the point of control?

A. At that point I found a current on the bottom of the ditch which indicated that the water flowed entirely to the bottom of the channel; I found the entire channel washed clean and eroded by the action of the water. I found indications of the action of the water for the entire contour of the channel, so that I was satisfied that the water was flowing and using the entire cross section at that point.

Q. There has been some testimony in this case to the effect that the high water stage in this ditch reached about 1,002. Have you computed the discharging capacity of the ditch at this point to which your attention is directed with reference to that water level?

A. Yes, sir.

Q. It has been testified in this case by Professor Bass that according to computations made by him, his estimate of the velocity of flow in that ditch was 2.4; what will you say as to the correctness of that estimate?

A. That is not correct. The velocity at that stage would be at least 4.4.

Q. When you say the velocity at that stage, what stage do you mean?

A. I mean the stage used by Professor Bass, being a stage of 1,002, or thereabouts.

Q. And computed according to what you claim is the correct velocity, what would be the discharge capacity of the channel of the cut-off at that height?

A. 1,760 second feet.

3472 Q. Having reference to the stage of water as you have testified it was observed by you at the bridge, have you projected your line to show where that water level would be at the point "B"?

A. Yes, sir.

Q. And what would be that stage, according to your figures?

A. 1,004.5.

Q. And have you computed the carrying capacity with reference to that stage?

A. Yes, sir.

Q. With what result?

A. The result that I get a discharge of 2,404 second feet.

Q. By discharging you mean the carrying capacity?

A. Yes, sir.

Q. And the figures as you have given them are shown here on the diagram, are they?

A. Yes, sir.

Q. In the computation shown on the diagram at the lower water level there indicated of 1,002.5, you take a velocity of 4.4 feet?

A. Yes, sir.

Q. While at the higher elevation of 1,004.5 you take a velocity of 4.77 feet. Will you explain the difference in those velocities, just generally?

A. The velocity in a stream increases as the depth of water increases. The velocity in that particular stream, assuming that the bottom width was 30 feet and it had a depth of one foot, that would mean that the area would be 30 square feet, that the hydraulic
3473 radius would be approximately .9 feet. Taking the same stream and increasing the depth of water to 10 feet with perpendicular banks, the area would then be 300 square feet, the hydraulic radius would be 6. In applying Kutter's formula to the lower depth I would get a velocity of approximately one foot per second, while at the greater depth I would get a velocity of nearly 4 feet per second, so that the depth has a great deal to do with the velocity. I was using a hypothetical situation, the channel was the same shape as the channel in question.

Q. How many years' experience have you in ditch construction and the practical observation of ditching operations?

A. I began drainage work in the year 1888, or 30 years ago. I have been engaged in drainage and reclamation work ever since. I have constructed or had charge of the construction of over three hundred different ditches in the State of Minnesota. I have been employed as consulting engineer on drainage work in North Dakota, in South Dakota, in Iowa, in Wisconsin, in Canada, in Kentucky and in Missouri. I have had charge of the measurements of the various watersheds of the State of Minnesota covering a period of nearly four years. I have prepared and had published the only complete report of the discharge of streams in the State of Minnesota. I have really made a special study of the run-off of watersheds, the carrying capacity of ditches and natural streams.

Q. In charting a water channel of this general character, from an engineering standpoint what is considered a controlling point for determining the discharge capacity?

A. The controlling points are, first a cross section of the
3474 stream where accurate measurements can be made; I mean by that a point where the water will all be in motion, where there will be no dead water. Then another point is the hydraulic gradient, that is, the slope on the surface of the water. Another controlling point is the coefficient of roughness, that is, the character of the sides and bottom of the channel. Another controlling element is the hydraulic radius.

Q. I assume that, Mr. Ralph, but what my question addressed itself to was this: as to whether or no, in charting the ordinary stream, a stream of this character, there is a particular point that is regarded from an engineering standpoint as a controlling point for the purpose of such estimation?

A. Yes, sir, there are particular points in all channels, for the reason that there are only few points where accurate measurements or even very approximate measurements can be made.

Q. In selecting this point "B" on your diagram for purposes of these computations, have you selected it with reference to the point last stated by you?

A. Yes, sir.

Q. And that is the point which in your opinion is the controlling point in the cut-off capacity; am I right?

A. Yes, sir.

Q. There has been a considerable amount of testimony and discussion in this case, Mr. Ralph, to the effect that a ditch that is overflowed will cease to function; what is there to that?

A. There is nothing to that, as I have already stated that water flowing at shallow depths and at depths from a few inches
3475 to a foot has a very slow velocity. The waters flowing over the surface of the ground, even though they might pass over a ditch, would flow very slowly, where the waters in a ditch that had reached a depth of much greater than that flowing over the surface, under like conditions as to slope, would flow many times faster. Consequently the waters flowing in from the side, even though they had raised to a height above the ditch, would have little effect on the flow of the ditch. In fact, the ditch would continue to—the waters in the ditch would continue to increase in velocity as they increased in depth.

Q. There has been some suggestion in this record to the effect that the general course of ditch construction in the area here in question is contrary to the natural line of flow and as a result that all this ditch construction either functions nominally or, I might say, negatively is there anything to that?

A. There is nothing to that. The ditches have been constructed along the lines of greatest slope, generally. It is possible that there might be instances where, by changing the course slightly to the northwest that a little greater slope might be secured, but this would ony be for a short distance, and considering the slope of the country generally the ditches are constructed along the line of greatest slope.

Q. Having regard then to your knowledge of the general topography of that country, what would you say as to—in a general way—as to the propriety, from an engineering standpoint, of constructing those ditches along the lines that have been followed?

3476 A. I would say that they were properly laid out and laid out according to the best engineering principles.

Q. Did you observe the stage of water at the Chicago, Milwaukee and St. Paul bridge near Wheaton, railroad bridge?

A. Yes, sir.

Q. Calling your attention to Exhibit 49, again, the diagram marked, "Cross section of Mustinka river at Railway bridge."

A. Yes, sir.

Q. Is that a diagram of the cross section of the river and the bridge?

A. Yes, sir.

Q. As it existed at the time in controversy?

A. Yes, sir.

Q. The water level as you have plotted it on this diagram comes to what point with reference to caps on piles?

A. It comes to a point within three inches of the tops of the caps on the piles under this bridge.

Q. Have you made a computation of the cross-section area at that point, assuming the water level last stated?

A. Yes, sir.

Q. What does it show?

A. It shows that the water channel at flood stage at that point had an area of 1,050 square feet; that the discharge or the number of cubic feet per second passing that point at extreme flood stage was 4,336½ cubic feet per second.

Q. That is a computation based on the discharge at the extreme flood stage, as I understand?

A. Yes, sir.

Q. Did you observe the level of the water at this time with reference to the wagon bridge near the railroad bridge?

3477 A. Yes, sir.

Q. And what will you say as to the water at that point?

A. It was flowing over the wagon bridge but I can't say how deep, but it wasn't very deep.

Q. You mean by that, over the floor of the wagon bridge?

A. Yes, sir.

Mr. Boutelle: We offer in evidence Complainant's Exhibit 49.

Cross-examination.

By Mr. Palmer:

Q. When did you measure the water surface at the bridge just north of the beginning of the cut-off ditch?

A. About the 1st of April, along the 5th or 6th of April, I saw it first 1916, at flood stage.

Q. You measured it at that time according to sea level datum?

A. I noticed where it came to on the bridge and afterwards determined what that was, based on sea level datum.

Q. How did you determine?

A. By running levels from a fixed government bench mark.

Q. Where?

A. On the wagon bridge about a quarter of a mile east of the bridge in question.

Q. When was that government bench mark put there?

3478 A. It was a bench mark that was put there by the state drainage commission in the year 1913 and I had verified from that government bench marks.

Q. What government bench mark?

A. Government bench mark of the United States Geological Survey upon which my survey of this watershed had been based.

Q. Where?

A. At White Rock and at Wheaton and at a point southwest of Wheaton some three miles, at Diamond, South Dakota, at the interstate bridge and several other points.

Q. Then, as I understand it, you started and ran levels from the government bench marks you have mentioned to the bridge a quarter of a mile east of the bridge in question and ascertained that the mark on the last named bridge was correct?

A. Yes.

Q. When did you do that?

A. I did that in the summer of 1917, and I did it again in the late fall of 1917.

Q. From each of the Government bench marks that you have mentioned you ran a level to this bridge?

A. No, I ran levels from the point I had previously determined based on those bench marks that I have mentioned.

Q. Where was that point?

A. That point was north and on a bridge near the corner of 1, 6, 7 and 12, about two miles north of the point in question.

Q. When did you put that mark there?

3479 A. I put that there in 1916.

Q. What time in 1916?

A. In the summer, May or June.

Q. What kind of a mark is it?

A. It is a mark on the bridge, on the floor of the bridge, and it has an elevation of about 1,000 feet, as I remember.

Q. What kind of a mark is it?

A. It is a cross and the letters 'B M.'

Q. Letters 'B M?'

A. Yes, sir.

Q. Is that all the letters that are there?

A. Yes, sir, all I remember.

Q. Who made those letters?

A. My rodman.

Q. Were you with him when he made them?

A. Yes, sir.

Q. What did he make them on?

A. Made them on the plank floor of the bridge.

Q. What with?

A. With a piece of crayon.

Q. What is the bench mark, what is the elevation?

A. It is 1000, approximately, I think, just about 1,000 above the sea.

Q. That is 1,000?

A. Yes, sir, nearly.

Q. In 1916, then you ran levels from the Government bench marks that you have mentioned to this bridge?

A. Yes, sir.

Q. Over at the corner of section 1 is that it?

A. Yes, sir.

3480 Q. From each of these bench marks?

A. No, sir.
Q. Which one of them?
A. From the — run-out from the bench mark near Childs, but all the bench marks were tied into each other so that I had——
Q. By whom?
A. By myself and my assistant.
Q. When was that?
A. Summer of 1916.
Q. What is that bench mark at Childs?
A. It is what is known as a tile, a government stamp on it.
Q. What is the stamp, its figure?
A. I can't remember the figures.
Q. Then you made the mark on the bridge at the corner of section 1 in 1916?
A. Yes, sir.
Q. And you say that is 1,000?
A. Yes, sir, approximately.
Q. What does that represent surface of the ground?
A. No, the floor of the bridge.
Q. Where is the floor of the bridge with reference to the surface of the ground?
A. It is about two feet higher or more, two or three feet higher.
Q. The surface of the ground at that point is about 997 then?
A. Yes, sir.

Q. When did you make the mark on the bridge a quarter
3481 of a mile east of the bridge at point 'A' here?

A. That point was the top of an eye-beam under the bridge but that is only a memorandum I have in my note book. I got that from the state drainage survey records and I verified it.
Q. How did you verify it?
A. By running levels, as I said before, from the bench mark at the corner of 1, 6, 7 and 12.
Q. What is that bench mark at the bridge a quarter of a mile east of the bridge in question, from the point 'A'?
A. It is the top of the eye-beam, I stated.
Q. What is the height?
A. I don't recall now.
Q. So that from this last mark that you have talked about, you determined that on the first of April, 1916, the water at the bridge marked point 'A' on your diagram was 1,004½ feet above sea level?
A. Yes, sir.
Q. Let me invite your attention to defendant's exhibit 4 being the map showing the contour lines, and I will mark here with my lead pencil the letter 'A' and will ask you if that corresponds substantially with the point at which you found the water surface at 1,004 feet above sea level in April 1916?
A. Yes, sir.
Q. Now, what is the contour line surface of the ground at that point?
A. 1,004.

Q. So the water would be a half a foot above the surface of the ground?

3482 A. Yes, sir,—well, that contour, while it shows 1,004, there are points there that are 1,005. There is a ridge right here, the banks of the creek.

Q. Is the ridge shown here on the contour line?

A. No.

Q. Passing northwesterly from the point in question marked 'A' I find the contour line 1,003?

A. Yes, sir.

Q. That would mean that throughout that surface the water would be a foot and a half deep?

A. No, sir, it means the water lowers in elevation as you go west.

Q. Lowers in elevation?

A. Yes, sir.

Q. Why?

A. That is the case in water flowing down hill; as you go further down hill you get a lower elevation of the surface.

Q. If there was a foot drop the surface waters would be running to the westward over the surface of the ground?

A. No, sir; but, as a matter of fact, the surface water did run over the surface of the ground at the west of that channel.

Q. The water 1,004, at point 'A,' as you proceed further west there is considerable of a drop, Mr. Ralph?

A. Yes, sir.

Q. I find here, going to the next contour line I find 1,002, 1,001, and then turning northward in the area enclosed within the loop of the river it goes to 1,000 and then 999 and then down to 998?

3483 A. Yes, sir.

Q. Now, the water would be then about 4½ feet deep at this contour line marked 998?

A. Not necessarily.

Q. How deep would it be?

A. Might not be over a foot deep.

Q. You think it might be a foot deep?

A. Might not be over that. The water was a foot deep down where it was 999. I observed it when it was a foot over the surface. That is when it flowed across to the Rabbit river, the water was a foot deep over the surface.

Q. Did it have some velocity of flow?

A. It did in the channel of the Rabbit, yes, sir.

Q. Did it as it flowed across this peninsula inclosed by the loop of the river?

A. I didn't observe the water out in that peninsula.

Q. Well, there being some 4½ feet drop of the water surface, 6½ feet over to 998, you naturally assumed there would be some flow in the water?

A. Yes, there would be some flow if the water was on the surface a distance of about two miles.

Q. As you proceed further west and north the contour line goes

down to 997, there would be a drop of 7½ feet; the water would be about 6 feet deep at this contour, marked 997?

A. No, sir.

Q. How deep would it be?

A. It might not be but a foot deep. You are going down stream and the water surface is falling as you go down stream.

3484 Q. And of course the water is flowing in that direction with some rapidity?

A. Yes, sir.

Q. And you so observed it.

A. Yes, sir, I observed it in the channel.

Q. It was flowing over the surface of the land?

A. Yes, sir.

Q. And continuing on, you say, northwesterly, over into the Rabbit river?

A. Yes, sir, that is, through the washouts in the road, in the dike.

Q. And I understand you to say that this fall from contour line 1,005, over to 997, takes place in what distance?

A. About two miles, two and a half.

Q. From this contour line at 'A,' 1,005, proceeding straight westerly, you come to 1,004, 1,003, 1,002, and 1,001?

A. Yes, sir.

Q. Well, if you go northwesterly you come to successive contours down to 197?

A. Yes, sir, and if you go westerly far enough you get the same elevation, 997.

Q. Do I understand you to say that at that time, spring of 1916, you found the old river channel running full banks?

A. Full banks and overflowing, yes, sir.

Q. And that, I believe, had a carrying capacity of some 1,848 cubic feet per second?

A. Yes, up to the crest of the flood.

Q. And if the waters at point 'A' attained a height of 1,002, you still find the water overflowing into the Rabbit river?

3485 A. That would depend; it might not overflow much in the Rabbit river at 1,002 at point 'A', probably overflow some.

Q. Which of course would mean it would be running full?

A. Yes, sir.

Q. You say at 1,002 at point 'A' the cut-off ditch would have a carrying capacity of 1,760 cubic feet per second?

A. Yes, sir, using the factor for velocity of 4.4 feet per second, which is a correct factor. That will get the same results that Mr. Bass got if he used that correct velocity.

Q. I understand you to say that the carrying capacity of the stream would vary with the height of the water?

A. Yes, sir; the depth, you better put it.

Q. Depth of the water. I suppose that would hold true of the channel of the old river same as of the cut-off?

A. Yes, sir.

Q. What would be the carrying capacity of the old river channel

around the bend with the waters at point 'A' attaining a height of 1,004½?

Mr. Boutelle: Is it your purpose to make the witness your witness in this examination?

Mr. Palmer: It is my purpose to ask him any question that I think is proper cross-examination.

Mr. Boutelle: I have asked him no question about the old channel at all. I did it purposely because I was aware that the cross-examination would retraverse the entire ground covered in the original case without regard to the direct examination in this instance.

There was no question asked the witness in regard to the old
3486 channel at all.

Mr. Palmer: I think I asked a question. Will you read it, Mr. Reporter?

(Question is read.)

A. I have estimated at flood stage the old river carried 1,848 feet. I will say that it is hard to determine the capacity of the old river because at flood stage the river is overflowing its banks to a considerable extent.

Q. Do you mean to say that it would have the same carrying capacity with the waters at point 'A' 1004½ as it would with the water a- point 'A' 1002?

A. No, sir.

Q. It would have a greater carrying capacity?

A. I would think so, yes, sir. Of course, I am talking about the old river two miles away from point 'A'.

Q. This water that was flowing over the surface of the ground with considerable velocity to the northwest would surely reach and fill the channel of the old river, Mr. Ralph, before it ran over into the Rabbit river?

A. It might not go over to the Rabbit river at all, it probably turned west and southwest and went down the Mustinka river.

Q. That is, the water that flowed over the surface of the ground?

A. Yes, sir, at the point to which you referred, the peninsula, as you call it.

Q. Yes, that is it, where it goes down as low as 997?

A. Yes, sir.

Q. So that those waters would reach and turn and run westerly or southwesterly down the Mustinka irrespective of the cut-
3487 off ditch?

A. I believe so, yes, sir.

Q. In your diagram, the third one that you mentioned in your direct examination, where do you get the figures of 504 square feet as the area of the cross section at flood stage?

A. I get that from a measurement of the channel at point marked 'B'.

Q. And you assume that to be the measurement throughout the channel?

A. I assume that to be the controlling point in the channel and the proper place to get the discharge.

Q. Now, give me your figures by which you obtained the 504, what did you assume to be the width and depth of the ditch?

A. I have divided it into sections and I can give you the different sections and the totals. The total of the different sections was 512.4, and from that I deducted 8 square feet for irregularities that could not be well measured out, so that it left 50.

Q. What did you assume to be the average top width of the cut-off?

A. The top width at the point I measured was 56 feet.

Q. 56 feet?

A. Yes, sir.

Q. And what was the depth there at that point?

A. Depth was 12 feet.

Q. What slope for the sides?

A. The slope was a little irregular and I divided it into sections, but it was approximately one to one.

3488 Q. And what did you assume to be then the average top width throughout the ditch?

A. I didn't take the average top width of the ditch.

Q. What did you assume to be the average depth of the ditch?

A. I didn't assume anything to be the average depth; it wasn't necessary in making the computation I was undertaking to make.

Q. If the average top width throughout was only 43.83 feet, of course your cross section and consequently your hydraulic radius would be correspondingly smaller?

A. No, sir, no other part of the ditch affected the discharge measurements that I made and factors were fixed so that they were not affected by the cross sections of other parts of the ditch.

Q. When were these measurements taken?

A. They were taken in the summer of 1917, and in the fall of 1917, well, I took those last measurements late in the fall of 1917.

Q. And what did you call the average width then at this point 'B'?

A. I didn't call anything the average width. I took the width of the top, the width at the bottom and divided it into different sections so as to determine the area, the accurate area.

Q. What did you get for the area?

A. 504 square feet.

Q. What did you multiply 504 by, I mean, what did you multiply 12 by to get 504?

A. I didn't multiply 12 by anything to get 504.

3489 Q. Give me your figures by which you obtained the 504?

A. I had a cross section 30 feet wide and 11.6 feet deep, that gave me 348 square feet. I had a section that was 3 feet by 6.4 and I had a section that was 7 feet by 9. That 3 by 6.4 gave me 19.2 square feet and I had a section that was 7 by 9 and that was 63 square feet. I had a section that was 3 by 6.4 that gave me 19.2. I had a section that was 6 by 9 again, that gave me 54. The total of those sections was 512.4 and I subtracted 8 square feet from that for irregularities and boulders that could not be

measured out very well, as it gave me 504, net area, 504 square feet.

Q. As you figured it the width of the ditch at that point, the average width, would be about fifty feet?

A. No, it wouldn't be that.

Q. A little less than that?

A. A little less than that.

Q. 42?

A. 42 or 3.

Q. That is clear down, with the slope of 1 to 1?

A. Yes, sir; you get sections, of course, much wider than that and sections again where the banks were low that was narrower.

Q. Now the depth, the average depth, clear down would be about 10 feet?

A. More than that.

Q. What would it be?

A. It would be 11 or 12 feet. I didn't get it in that way because you can't get an accurate measurement in that way.

3490 Q. And, of course, if it were 9 or 9½ your hydraulic radius would be correspondingly less?

A. Yes, where I took the section at 10 feet stage my hydraulic radius was less.

Q. In your answer, upon your former examination to the hypothetical question propounded you assumed that this cut-off ditch was the same size in the summer of 1915 as you found it in the summer and fall of 1917?

A. 1915?

Q. Yes.

A. 1916, you mean, at the time of the flood?

Q. Then you assumed that in 1916 at the time of the flood, it was the same size as you found it in 1917?

A. Yes, sir.

Q. You didn't form any opinion as to the effect of this cut off ditch upon the floods of 1915 in the summer?

A. No, sir, I haven't attempted to form any opinion to its effect on the floods of 1915. As I stated before, I don't know just how effective the ditch was operating in the spring of 1915. The dredge was still in the channel, digging it out.

Q. What in 1917 do you say, in figuring this ditch, you found the bottom elevation to be, sea level datum?

A. At the point I measured?

Q. Yes.

A. I think it is 992.5.

Q. Of course, if the elevation was 995 in the bottom of the ditch, then your hydraulic radius would be reduced accordingly?

A. Yes, sir, if it was 995.

3491 Q. Mr. Ralph, taking your contour lines on complainant's exhibit 1, which you say was made by you?

A. Yes, sir.

Q. You find the fall, beginning at the southern extremity of this

delta zone to be successively from 1,040 north and slightly westerly to this point 'A' that we have just mentioned down to, 1,005?

A. Yes, sir.

Q. And then, continuing straight on northwesterly we find it running down as low as 997?

A. In the channel, 998 at the confluence of Twelve Mile Creek and the old Mustinka.

Q. Well, 997, appears to be the surface of the ground as you pass straight west from the confluence you mentioned?

A. 997, of course, is further west down the watershed.

Q. Now, the course of Twelve Mile Creek is practically straight north?

A. Yes, sir.

Q. And the course of Five Mile Creek is north by west?

A. Yes.

Q. Referring to these county ditches to which reference has been made here, and which are shown by defendant's exhibit 7, to be very numerous——

A. Yes, sir.

Q. The course appears to be in invariably straight east and west?

A. Yes, sir. They are laid out properly and that is down the greatest slope and almost at right angles to the contour lines,
3492 which is proper.

Q. That is, the waters in Twelve Mile and Five Mile creek do not follow the line of greatest slope?

A. No, Twelve Mile creek runs north and the Mustinka runs south a little ways west of it, so you have a peculiar condition right there.

Q. Those two streams, Five Mile and Twelve Mile creeks, run at right angles to the lines of greatest slope?

A. Yes, sir; that is, if you continue on that way, but they change their course, of course, and turn and go south, go west and then south.

Q. Except as the waters overflow as we have seen over north and west into the Rabbit river?

A. Yes, sir.

Q. There has been a great deal of testimony here by resident living on the ground, Mr. Ralph, that in the years 1915 and 1916 there was a very large quantity of water that went north through flood channels shown on the map here, north of the old Mustinka ditch, from a point where the cut-off begins easterly, and particularly in sections 16, 15, 14 and 13, Township 128, Range 45. Do I understand that you made no observations respecting that flow of water?

A. Yes, sir, I did. The water spreads out all over that territory or tract described as the delta zone in the years 1915 and 1916 for the reason that the Mustinka was surcharged and that the dike was built across the inlet to the Rabbit, I wouldn't be surprised that there was a large quantity of water in the delta zone regardless of the ditches.

Q. And went over easterly of the place where it naturally overflows into the Rabbit, you testified?

3493 A. No, I didn't testify——

Q. And at points easterly?

A. At points southerly and easterly, yes, sir.

Q. To what do you ascribe the presence of more water, perhaps, than ever before in its history being on this delta zone through the seasons of 1915 and 1916 and the spring of 1917?

A. I was out there in the summer of 1916 and in 1917 and drove all over that delta zone and around it in an automobile, and I didn't see anywhere near as much water as I saw in years before the ditches were put in. There must be some misconception in the minds of the farmers about there being more water there and about it remaining in there in 1915 and 1916 and 1917 than in former years. It is entirely in conflict with their testimony before the legislative investigating committee and in conflict with the preamble of the legislative act appropriating money for that ditch.

Q. But I ask you, assuming that there was more water, Mr. Ralph, in 1915 and 1916 and 1917, to what might it be ascribed?

Mr. Bronson: In the delta zone?

Mr. Palmer: Yes, in the so-called delta zone.

A. Assuming that there was more there?

Q. Yes.

A. Than there was at any time previously?

Q. Yes.

A. It might be ascribed to greater precipitation than at any time previously and it would have to be much greater, and that was not the case.

Q. Well, but I say if it was there, you say it might be

3494 ascribed to a greater precipitation than any time previously?

A. Yes, sir.

Q. You speak of the preamble to the legislative act in question having reference to a large number of acres of land flooded?

A. Yes, sir.

Q. That had never been flooded before?

A. Yes, sir.

Q. Now, you think that those 8,000 acres that were flooded from the year 1898 on and had never been flooded before were lands in this delta zone?

A. I think that those lands were flooded from 1898 on and that they had been flooded in all wet seasons for all time prior to 1898.

Q. So you think that the statement in the preamble of the act that there was 8,000 acres flooded there that had never before been flooded is at variance with the facts?

A. I think that the time is too limited, that the time it had been flooded extended prior to the passage of that act and prior to the construction of the state ditch and that it did not flood only after the construction of the state ditch.

Q. Then, as I understand it, those 8,000 acres in the delta zone

that you speak of as being flooded from 1898 on to 1911, were not flooded until after the construction of the first state ditch?

A. I stated just the opposite, that it was flooded.

Q. I say that the statement in the legislative act of 8,000 acres flooded from 1898 to 1911 that had never been flooded before is not correct?

3495 A. I think the part that had never been flooded before is not correct.

Q. You think it had been even more flooded prior to the construction of the first Mustinka ditch?

A. Yes, sir, I think it had and the government plat shows it was flooded, it was surveyed in 1859.

Q. The government plat shows practically this entire delta zone to be swamp land?

A. No, sir.

Q. I notice in your map here, Exhibit 1, you have practically all of Clifton township east of the Twelve Mile Creek except the southern tier of sections in the delta zone?

A. Yes, sir, the greater part of it.

Q. I take it that all those lands in the delta zone were of a swampy, marshy character?

A. No, sir, they were subject to overflow in times of high water.

Q. But they were not of a swampy or marshy character?

A. Not all of them, no, sir.

Q. Were any of them, in Clifton township?

A. Yes, sir.

Q. And in making the government plats as the lands of swampy and marshy character shown thereon?

A. In later surveys they have been more particular about showing swamp lands for the reason that the state had an interest in the swamp lands. In the early surveys the swamp lands were not designated as particularly as in the later surveys.

Q. But in the later surveys the swamp lands are more

3496 particularly designated because the- belonged to the state.

A. Yes, sir.

Q. And I take it that the purpose of the construction of this first section of the ditch was for the purpose of draining those state swamp lands as recited in the act?

A. That was recited in the act, I presume, but I don't think there was any large amount of state swamp lands in that locality at the time of the construction of the ditch.

Q. That is another incorrect statement in the legislative act then?

A. Well, I think the records will disclose that, if you will look them up, there was not any large quantity of swamp lands in that locality at the time the ditch was constructed.

Mr. Bronson:

Q. You mean, in the delta zone?

A. In the delta zone.

Mr. Palmer:

Q. Let me call your attention to the government plat of the township of Clifton, and I will ask you if there is one foot of that township that is designated as swamp or marsh land?

A. I don't see any land so designated but there is undoubtedly considerable low, marshy land in that township, land that is overflowed in times of high water.

Q. The government surveyors seem to have missed that?

A. Survey may have been made in seasons such as 1910 and 1911 when the country was very dry and all that land was very dry.

Q. So that there might be, even the Redpath sloughs might have been dry and they might have missed them completely?

3497 A. They might have missed a large part of those sloughs.

Q. Your delta zone seems to extend over a considerable portion, northwestern portion of the town of Logan in Grant county?

A. Yes, sir.

Q. Let me call your attention to the government map of Logan township and I will ask you to point out in this delta zone area one foot of swamp or marsh land there designated as such?

A. I don't see any swamp land designated on the plat.

Q. Now, your delta zone also includes a small part of the western portion of the town of Gorton in Grant county, doesn't it?

A. Yes, sir, a small part on the Mustinka.

Q. I call your attention to the Government plat of that township, being Defendant's Exhibit 114, and I will ask you to point out one foot of land designated as swamp land on that within your so-called delta zone?

A. I don't see any.

Q. I call your attention to Defendant's Exhibit 115, being the government plat of Redpath township. Do you find any of that land designated as swamp or marsh land?

A. Yes, sir.

Q. And those are particularly Sections 21 and 22?

A. Yes, sir, and 23 and parts of Sections 16 and 20.

Q. Between 3 and 4 miles, all told?

A. Yes, sir.

Q. That is the area corresponding to what has been de-

3498 scribed here as the Redpath sloughs?

A. I don't know how the Redpath sloughs were described, I didn't hear the testimony.

Q. Well, that is what is called the Redpath sloughs, isn't it?

A. Yes, sir, Redpath slough.

Q. It was customary, you say, for the government to select the swamp lands within an area and grant them to the state as such, under the so-called Arkansas act of 1850?

A. Yes, sir.

Q. Did you ever ascertain whether any land whatever in the town of Clifton was so granted to the state?

A. No, sir, I didn't ascertain.

Q. And was there any to your knowledge in your so-called delta zone in the town of Logan in Grant county?

A. I have no knowledge.

Q. Or Gorton, in Grant County?

A. I have no knowledge of state land selections in any of those townships.

Q. But you would naturally find this land in Redpath township within this Redpath slough granted to the State as swamp land.

A. Yes, sir.

Q. And the first section of the Mustinka ditch, you say, the legislative purpose was to drain those swamp lands as expressed in the act?

A. I didn't so state. You stated that, I said that I presume it was in the act.

Q. I can't quite understand what you refer to as the 8,000 acres that is attempted to be mentioned in the legislative act of 1911 as having been overflowed. Do you say that your understand-
3499 ing is that that was land within the delta zone?

A. I would have to read the act. I have forgotten just—it might have reference to land further down.

Q. You say you have some knowledge of the testimony given by witnesses before the legislative committee preceding the act of 1911?

A. Yes, sir.

Q. Did your testimony refer to lands in the delta zone or to lands lower down?

A. As I recall it now, it referred to land along the Mustinka valley below the mouth of the old state ditch.

Q. Entirely west of the delta zone?

A. Yes, sir.

Q. And, in fact, an area of land extending from the northerly part of this bend clear down to the Wheaton bridge?

A. Yes, sir.

Q. You mean substantially the area shown within the dotted lines on Defendant's Exhibit 73?

A. That is as I understand it, yes, sir.

Q. As I understand it, you were State Drainage Engineer from 1900 to 1913?

A. Yes, sir.

Q. And this ditch constructed in 1913, 1914 and 1915, the last part of the Mustinka ditch, was laid out by you as State Drainage Engineer?

A. It was against my best judgment and against my protest, and in fact I handed in my resignation rather than go any further with it.

Q. You- idea was to go straight on north and northwest-
3500 erly, following the Rabbit river?

A. My idea was to make an impounding reservoir of Lake Traverse, to correct the channel of the Mustinka, as it has been corrected, and to correct the channel of the Rabbit, and to correct the channel of the Bois de Sioux, all of which could be done for about

one fourth of the damage that has been caused by the damming of the water into Lake Traverse.

Q. As I understand your testimony, your opinion is that the first section of the Mustinka ditch constructed way back in 1896 transferred a part of the waters from this delta zone down to this area that we have last mentioned and flooded this 8,000 acres of land described in the legislative act of 1911?

A. Yes, sir, that was my opinion, that the first ditch had that effect.

Q. And then the second part of the ditch constructed in 1913, 1914 and 1915, was for the purpose of carrying those waters onto an outlet and obviating that flooded condition of that 8,000 acres?

A. It was for that purpose and for the further purpose of furnishing a better outlet for the original state ditch and the drainage from the delta zone.

Q. And in your opinion the last constructed portion accomplished that purpose?

A. Yes, sir, it transferred the flood plane lower down, carried it down on the Bois de Sioux.

Q. That is, it carried the waters down, into Lake Traverse?

A. Yes, sir, and overflowed the Bois de Sioux.

3501 Q. And from there, you say it is your opinion they passed on up into the Bois de Sioux?

A. My opinion is that it was the cause of flooding the Bois De Sioux valley.

Q. I understood you *tin* your former testimony today that none of these lands in the Bois de Sioux valley are what would properly be designated as marsh or swamp land?

A. I didn't so testify. I testified that lands adjacent to the stream were low lands and were suitable only for hay and grazing purposes but that a large part of the lands that had been flooded were well suited under ordinary conditions for agricultural purposes.

Q. About what portion do you estimate of the lands flooded in 1916 are properly designated as swamp or marsh lands?

Mr. Bronson: Objected to as improper cross-examination. Already gone over in the former testimony of this witness.

A. I wouldn't say that it would exceed 25 per cent of the area flooded.

Mr. Palmer: You call to mind the lands in the Bois de Sioux valley immediately north of the south line of North Dakota, do you?

A. Yes, sir.

Q. Now passing westerly from the channel of the Bois de Sioux, how wide a strip westerly do you think should properly be designated as marsh or swamp lands?

A. There are patches in the entire strip, the lands right north of the village of White Rock——

Q. This would be a mile north?

A. I wouldn't be able to say off hand, but quite a narrow strip on the Dakota side.

3502 Q. A mile and a half?

A. Oh, no, less than that.

Q. Would you say a mile?

A. I would say probably a half a mile, I wouldn't think any more than that.

Q. And how far northward would that extend?

A. That would diminish as you went northward and when you got to a point opposite Fairmount this strip would not be more than a quarter of a mile wide.

Q. And I suppose it would narrow up in some *pla*ces and grow larger in others?

A. That might be, but as you went north it would generally diminish and when you reached the mouth of the Rabbit there would be no swamp lands.

Q. Now, there are two distinct arms of the Traverse Lake that extend northerly across the south line of North Dakota, and up through the Bois de Sioux valley beside the Bois de Sioux valley itself, isn't there?

A. I think so.

Q. And I suppose the lands along these arms would be designated properly swamp lands?

A. Yes, sir, I think so, to some extent.

Q. And you say that Government surveys later than 1859 are likely to be more accurate as to the designation of swamp lands than prior thereto?

A. Yes, sir, and that depends on the season. In wet seasons they would show a lot more swamp lands than they would in dry seasons. That is, in a real dry season, like 1910 a survey might not show more than one half of the swamp land as it was in
3503 the season of 1916 or 1896 or 1897, or 1906 or 1907? Those years the surveyors would show twice as much swamp land as they would in a dry season.

Q. These surveyors would — unable to tell in a dry season swamp lands from other lands?

A. Yes, sir, they would be unable to tell whether lands are swampy or should be classed as dry lands; where the prairie grass grows and where the lands are low it is hard to distinguish between swamp grass and the border land grass.

Q. And I suppose that would apply in 1917 just as much as to the government surveyors?

A. It would apply to my judgment in 1917?

Q. Yes.

A. I have examined those lands with a view to determining what part of them was suitable for cultivation and what part was not, and I might say that I classified and examined lands a long time and I think I have got pretty good judgment about those things.

Q. Your judgment would be superior to the government surveyors?

A. I didn't so state; I stated that it would depend largely on the conditions at the time the surveys were made.

Q. I call your attention to defendant's exhibit 108, being the

government survey plat of township 129, of range 47, Richland County, North Dakota, and to the channel of the Bois de Sioux as there marked

A. Yes, sir.

Q. Now, at the point where the Bois de Sioux crosses the south line of North Dakota there appears to be a strip there marked
3504 marsh land a mile and a half in width, approximately?

A. No, sir.

Q. How large is that?

A. About a mile but there is a part of it that is dry; a mile north it is just a half a mile or little over and a mile and a half north it is about a quarter of a mile.

Q. You think this plat of this marsh land is approximately correct?

A. I think it was approximately correct at the time it was made.

Q. And the parts of the arms of lake Traverse extending up through there, marked Marsh land, you think it is approximately correct?

Mr. Bronson: Complainant objects to this as improper cross examination and interposes the same objection to this line of *of* testimony and questions.

A. I have no reason to believe but what the surveyor made a correct representation at the time the survey was made.

Q. Let me call your attention to the Defe*d*nant's Exhibit 107, a government survey plat of township 130, range 47, Richland County, North Dakota.

A. Yes, sir.

Q. And particularly to the lands along the Bois de Sioux there designated as swamp or marsh lands; you think that is approximately the area of swamp or marsh land that existed there?

A. Approximately, yes, sir, averaged about a quarter of a mile opposite Fairmount.

Mr. Palmer: At this time the defendant offers in evidence Defendant's Exhibit- 112, 113, 114 and 115.

3505 Mr. Pinkney: We object to them as *in*competent immaterial and irrelevant.

(Recess taken until 1.30 p. m.)

February 16, 1918, at 1.30 p. m.

GEORGE A. RALPH, being recalled for redirect examination, testified as follows.

Examined by Mr. Bronson:

Q. I show you, Mr. Ralph, defendant's exhibit 5 introduced in evidence here, purporting to be the findings of the legislative committee, about which questions were propounded to you and ask you

to look it over. I will ask you to state whether or not you have looked over this exhibit, defendant's exhibit 5.

A. Yes, sir.

Q. I will ask you to state whether or not in your observation and experience in connection with this territory up there which you have mentioned in the testimony, both in connection with your observations made as an individual and while state engineer, you have observed any facts contrary to the findings made in this defendant's exhibit 5; if so, state what they are?

A. I haven't found anything that I could say was contrary to that statement, the statement set forth in that petition.

Q. It appears there is something stated in this defendant's exhibit 5, about 8,000 acres of land adjacent to the Mustinka river, speaking of them as good, first class farming land, etc., that have produced in the past large crops of wheat, etc., do you know to

3506 what that refers?

A. It refers to the lands lying south from the northerly loop of the river or the part of the river that has been referred to as around the bend, north of the cut-off channel and then down the river to the point where the Chicago, Milwaukee and St. Paul Railroad crosses the Mustinka.

Q. And it speaks in paragraph nine here of certain damages being occasioned to the petitioners, damages to crops something like $28,302 does that refer to these same lands?

A. Yes, sir, I so take it.

Q. You were present and heard some of the testimony?

A. Yes, sir.

Q. And this testimony concerning damages to lands or overflowing the lands, was that with reference to these lands below the Delta zone, this 8,000 acres below the Delta zone?

A. Yes, sir, and below the northerly bend of the Mustinka.

Q. In your testimony this morning with reference to certain questions that counsel propounded to you, I believe you mentioned that the delta zone, that is, this portion of the delta zone in this loop district, was flooded at different wet seasons before the construction of the first state ditch as well as afterwards, and I didn't know whether you meant that this district of the delta zone referred to this 8,000 acres or not. What is my understanding about that?

A. I had never stated that the part below the—or further down stream than the northerly bend of the Mustinka was flooded before the construction of the state ditch. The part that I referred to that was flooded before the years 1895 and 1896 was the tract colored blue on the map, on complainant's exhibit 1.

3507 Q. As I understand it then, this territory in the delta zone particularly in Redpath township up where the Five Mile creek and the Twelve Mile creek flowed into the Mustinka river, was and has in years past in wet seasons, been subject to overflow conditions and that when this first section so-termed, of the state ditch was constructed, more waters were brought down to this Delta zone and, in addition to the Delta zone being flooded, this 8,000 acres was also subject to floods?

A. Yes, sir.

Q. Is that the understanding?

A. That is true.

Q. In one of the questions of counsel to you concerning the elevation of the ditch, cut-off ditch, which I believe you stated to be 992.5?

A. Yes, sir.

Q. Counsel asked you if it were 995, what effect it would have upon your computations that were made, and in that connection it appears that Mr. Ringdahl in his testimony concerning the plans and specifications and concerning the construction of this ditch testified, as my notes show and as I recollect, that from Stations #1 to #5 the elevation of the water in the ditch was 995, and from then on, Station #6, 994.5, Station 10, 994.7. What does that elevation mean?

A. Well, it dosen't mean anything with reference to the datum used in the latter survey. The sea level datum that we had for the ditch survey was obtained from the railroad company's elevation and there was quite a difference, I don't know how much. But that elevation that was used in those notes and on those maps of the ditch would have to be changed to accord with the datum used in
3508 the surveys of 1916, and I don't know how much that difference was. And furthermore, those levels would have to be checked over and verified because they may have carried for a long distance and errors may have crept in, so I wouldn't be able to compare now the datum used and what the difference was.

Q. I also notice in that regard, in checking through the testimony, that Professor Bass mentioned the difference between the U. S. Geological Survey engineering basic data—if I may use that term—and the U. S. Army Engineers' data the difference amounting to 1.29. What does that mean?

A. Well, it means there was an adjustment of the sea levels elevations that had been carried over the country made in the year 1912 by the United States Geological Survey, and they found that an error had crept in and that the error in some places amounted to as much as a foot and seven or eight tenths with their former records of the elevations, and there was also a considerable discrepancy between the records of the United States Army Engineers' surveys and the United States Geological Surveys and that difference was, at the point to which Mr. Bass refers, was on account of that adjustment that was made and fixing the standard United States sea level datum for this part of the country as well as all parts of the country, that is a sea level datum that would be used and adopted in the future as the correct sea level datum. That is the datum that I used in making my surveys, the 1912 adjustment.

Q. Now, counsel has asked you a hypothetical question based upon certain testimony given by what we might term the nonexpert witnesses or residents, some of them, in the delta zone, concerning the flood conditions there existing in 1915 and 1916 and part of 1917. It appears in the testimony that Charles Tesky gave some
3509 testimony concerning the flood conditions in 1915 and in 1916 of the waters going over into the Rabbit river, that is,

in the direction of the Rabbit river, across his place near this Tesky bridge that has been talked about in the evidence, and going over from a week to ten days in the spring of those years and from three to four days in the summer of 1916, and of the flood conditions existing up around his place, which I assume you know where he is situated?

A. Yes, sir.

Q. And also Mr. Carl Krenz gave some testimony likewise concerning the flooded conditions there in this delta zone up near where Twelve Mile creek flows into the Mustinka river in the years 1915 and 1916 and of the bridge near his buildings going out and of the waters being greatly in excess as to flood than he had ever seen before, or something to that effect, and also one Mr. Hokinson, I think it is Emanuel Hokinson, whom I also think you know of, do you not?

A. Yes, sir.

Q. Likewise gave some testimony concerning flood conditions in 1916 and he saw more water there than he ever did before, and that the waters cut across from his buildings to the Mustinka river and the Twelve Mile creek flooded to the northwest and that the Five Mile creek overflooded in Sections 21 and 27 and spread out so as to join the Mustinka and the land between Five Mile creek and Twelve Mile creek up in that loop district was overflooded, and that in 1916 in that vicinity when he went along the road he had to get up in the buggy so he wouldn't get his feet wet, and also Mr. Neuman gave some testimony as to the flood conditions existing up there in
3510 the spring of 1916 for a period of ten days to two weeks, and he saw more water than he had the time in 1888 or 1897 and of the country being flooded at that time with water and in a lesser way also in 1915, and also a Mr. Andrew Wolk gave some testimony likewise——

A. I can't place him.

Q. Northwest of Section 3 or 1 in Munson township and south half of section 11.

A. Oh, he lives in Munson township on the east side of the Mustinka?

Q. On the west side, northwest side.

A. West side of the Mustinka, yes.

Q. He also gave some testimony concerning flood conditions in 1915 and 1916 and the existence of same for a period of some ten days in 1916 and that at Section 11, east, at this time, in 1916, the flood waters were a mile wide.

A. In what township?

Q. In Munson township, right west of the Mustinka river.

A. Yes, sir.

Q. And he saw also a flood, not as great, in the spring of 1917, and these flood conditions likewise existed in 1915 but in a lesser quantity; and also William Ringdahl——

A. Well, William Ringdahl didn't claim his lands were flooded.

Q. No, wait a minute; and also William Ringdahl gave some testi-

mony likewise about these flood conditions existing up in the loop district—I am speaking now of the loop district.

A. Yes, sir.

3511 Q. And the lands immediately adjoining the same—of the flood conditions existing up there in the years 1915 and 1916, quite similar in its character to that of these other witnesses I have mentioned. And that likewise Thomas E. Dunn gave a little testimony with regard to the flood conditions there in 1915 and 1916. Now with reference to this testimony and assuming that in the years 1915 and 1916 this territory up here in Redpath township where the Five Mile creek flows into the Mustinka and where the Twelve Mile creek flows into the Mustinka and where the cut-off ditch there taps the Twelve Mile creek and flows westward into the Mustinka river, assuming, I say that in the years 1915 and 1916 and in the spring of 1917 this territory was flooded in the manner and in the shape and to the extent that these witnesses have testified,—you may state in what manner in your opinion, the imposition of these artificial conditions by the construction of the first section of the ditch, the construction of the second section of the ditch and all these other articicial conditions in the way of ditches and ditch constructions that lead into these streams that I have mentioned are contributing factors or in any way explain the existence of such flood conditions during such periods of time, if any?

Mr. Palmer: That is objected to as not proper redirect examination, argumentative, assuming facts not established by any testimony in the case and not a subject of expert testimony and not a subject upon which the witness could give an expert opinion or that the witness has shown himself competent to testify to.

A. I can understand that the flood waters would be carried down under the present conditions more rapidly than they would

3512 in a state of nature, that flood waters falling on the watershed of the Mustinka in Grant county and in all parts of the watershed above the junction of Twelve Mile creek and the Mustinka river would be collected and the flow of the same very much accelerated by the artificial construction and that a flood though it might not be as great as the floods in former years when things were in a state of nature, might give us a greater amount of water down at the junction of the Mustinka and Twelve Mile creek for the reason that the waters were carried there much more rapidly than they would be in a state of nature and that part of the outlet that they had in a state of nature was shut off by the dike which I have referred to.

Q. Where do the waters, as these artificial conditions were imposed in this territory by this whole system of connected ditches have to go, as you observed it and as the conditions of the country in connection with these artificial conditions so imposed show?

Mr. Palmer: That is objected to as not redirect examination and not a subject of expert testimony nor one upon which the witness has shown himself competent to testify.

A. They have to go down the Mustinka and into Lake Traverse except that portion that escaped across the dike through the washout.

Mr. Bronson:

Q. Am I to understand from your answer for instance, for the purpose of illustration, the waters that came down the Five Mile creek from the Herman lakes or the lakes near Herman would, under the artificial constructions, naturally pass where before they got into the Mustinka river?

3513 A. The would pass through the ditches into the Mustinka river in their present state. Under present conditions the waters that naturally came down Five Mile creek will be carried directly into the Twelve Mile creek and down the Twelve Mile creek into the Mustinka.

Q. Well, look at the map for the purpose of my understanding, Defendant's Exhibit 7, it appears there are some ditch constructions near Herman that tap some lakes there?

A. Yes, sir.

Q. And that those lakes and this ditch construction runs into the Five Mile creek?

A. Yes, sir.

Q. Now, the waters, do I understand, that come from the Herman district and those lakes, would go up Five Mile creek?

A. After running into Five Mile creek?

Q. Yes.

A. Go down Five Mile creek, yes, sir.

Q. And those waters that came from Herman would go up Five Mile creek to this delta zone we are talking about in the testimony that was flooded, go down?

A. Yes, sir, or would be intercepted by the ditches that cross Five Mile creek and carried directly into Twelve Mile creek.

Q. But in every event the waters would go to the same place?

A. Yes, sir.

Q. That is, up there in this district where the cut-off ditch is and where Tesky's farm is and where the other farms are?

3514 A. Yes, sir.

Q. And from there go down the cut-off and around the loop into the Mustinka river?

A. Yes, sir.

Q. That would be the same way with the first cut-off ditch waters, the first Grant County ditch waters, the waters would come down to the Tesky place and this cut off, and the other places I have mentioned?

A. Yes, sir.

Q. It appears also in the testimony that one Rogers, Mr. Ralph, who lives in Section 22 of Clifton township gave some testimony to the flood conditions existing near or about or on his farm and in the territory adjacent in the year 1916 water overflowed in the ditch, overflowing his farm to some extent and that it remained several days, and also in the same connection Mr. Munson who lives near

there and owns some land I think in Section 32, Clifton township likewise gave some testimony of the flood conditions existing in 1916, of the ditch overflowing and spreading over his farm to some extent, or, in fact the Twelve Mile creek in a way backing up waters into the ditch and the waters getting outside of the ditch and running through some runs there that lead towards and into Twelve Mile Creek. Now, I will ask you to examine Defendant's Exhibit 7, Mr. Ralph, and ask you to state to what extent Twelve Mile creek in its upper reaches carries any waters from artificial constructions that it didn't carry in a state of nature and to what extent, if you know?

Mr. Palmer: That is objected to as not re-direct examination, not a subject of expert testimony and not a matter on which the
3515 witness has shown himself competent to testify, no foundation laid.

A. I will say that it carries a large amount of water that would not pass down the creek in a state of nature by reason of the artificial construction on the headwaters of Twelve Mile creek which result in draining numerous lakes and sloughs that in a state of nature either had no outlet or drained off very slowly.

Mr. Bronson:

Q. To what extent is that true of the other branch or upper reaches of the Twelve Mile creek; Twelve Mile creek has two upper reaches, does it apply to both or one?

A. It applies to the Mustinka watershed.

Q. That would be both reaches of the Twelve Mile creek?

A. Yes, sir, the lakes in to the east of Herman did not discharge their water into Twelve Mile creek or Five Mile creek in a state of nature except in a roundabout way and then only to a limited extent. The ditch that was cut through south of Herman cut a ridge and carried the waters directly out of that part of the watershed and into Five Mile creek and Twelve Mile creek.

Mr. Pinkney:

Q. In your cross-examination by Mr. Palmer this morning you testified in relation to what you understood to be certain swamp lands, lying on the west side of the Bois de Sioux river from the North Dakota line north as far up as Fairmount, and as I understood your testimony, you stated it was a strip from a half to quarter of a mile in width. Did you mean to be understood as stating that was in fact swamp land that could not be cultivated and was not cultivated?

3516 A. No, I meant that that land in my judgment was better suited for meadow or grazing than for any other purpose and probably could not be used successfully year after year for raising crops. The land along the Bois de Sioux is of quite a solid character. That is, in dry seasons or ordinary seasons you can drive along the bank of the river with a vehicle without any difficulty and

the land is solid and quite firm, but there is a strip along there that would be subject to overflow at times or ordinary high water.

Q. You don't know, as a matter of fact, whether it is being cultivated and cropped from year to year?

A. I think it has been.

Q. With different crops of grain?

A. I am not sure about that. I was there, you see, in the years 1916 and 1917, when it was pretty well flooded, but it had the appearances of having been cropped right up to the river bank.

Recross-examination.

By Mr. Palmer:

Q. I don't know that your testimony is clear as to what you referred to as the dike preventing the overflow of waters into the Rabbit river at the northerly bend of the Mustinka, Mr. Ralph. Will you tell us what you mean by the dike?

A. Yes, sir. When I refer to the dike, I refer to an embankment along the north side of a ditch that is constructed on the line between Sections 3 and 10, 4 and 9, 5 and 8, 6 and 7 and 1 and 12, and emptying into the Mustinka river near the corner of sec-
3517 tions 1, 6, 7 and 12. Along the north side of that ditch there is an embankment some three feet above the surface of the ground that is built in the way of a dike for the reason that there are no openings through the embankment to permit the escape of water excepting a small culvert that has been put in down near the corner of sections 1, 6, 7 and 12.

Q. That is what is designated on the map, Exhibit 7, as County Ditch #10?

A. Yes, sir.

Q. Well, then, what you call a dike is the earth that was taken from that county ditch #10 and thrown on the north side and was thereafter leveled down to make a road-way?

A. Yes, sir.

Q. Where do you say is the natural point of overflow of waters into the Rabbit river in that northerly bend of the river?

A. The natural point of overflow is at the corner of sections 1, 6, 7 and 12, in Township 128, Ranges 45 and 46. The waters overflow also, or did overflow in a state of nature at a point about three quarters of a mile east of the point which I have just described. They also overflowed further to the east, but the direct overflow into the Rabbit river was at the point first described.

Q. There has been considerable testimony here of overflow at a point about three quarters of a mile westerly of the point you mention and over the west side of Section 1 and of there being a flood channel extending north there; did you make any observations as to that?

A. Yes, sir. I examined the river bank very carefully
3518 along there, there is no flood channel leading out of the river. The river bank is solid and all uniform of height from Mr. Tesky's farm on the west and the water would have to reach a

stage of something over 998 feet before it would pass over that bank. When it reached a stage of 996 or 996.5 at the culvert that I have described near the corner of Sections 1, 6, 7 and 12, it will then overflow to the north and escape into or down the Rabbit river.

Mr. Bronson: You mean 998?
A. 996.5 and above that.
Mr. Pinkney: Escape through the culvert?
A. Yes, sir.

Mr. Palmer:

Q. There has been quite a number of witnesses who were there on the ground, or claim to have been that saw the water going over in considerable quantities and for several days north from the river west of Mr. Tesky's that you think couldn't be true?

A. Well, the water was very high in 1916 and the river was overflowing its banks for from 2 miles or more south of Mr. Tesky's and to the west, and I have no doubt but what it overflowed some to the north and west of Mr. Tesky's but there is no channel there. It is a level surface and there is no erosion or no natural channel.

Q. Like conditions were testified to as having existed of water having gone over in practically the same quantities in the spring of 1917, what have you to say to that?

A. Well, I would say that under the present conditions as
3519 to that referring to the numberous artificial channels, that water is brought down so rapidly that a flood might accumulate at the point where the Mustinka and the Twelve Mile creek join, and floods might rise there and overflow.

Q. So that testimony may be correct?

A. Yes, sir, that may be correct, taking into consideration that the water must come down now very rapidly and would probably accumulate there in much larger volumes than it would in a state of nature.

Q. There were also a number of witnesses who were there on the ground who stated that the water went through this culvert across this large embankment of County Ditch #10 at the point of natural overflow which you have mentioned and again washed out the embankment, and while it didn't entirely cut out the culvert, it cut out quite a section of the grade on each side of it, in the spring of 1917. Do you think that testimony might be correct?

A. That might be correct. I noticed there was a small part of the grade at the east end of the culvert that was washed out and had been filled up with manure and earth.

Q. And some rocks to hold it in?

A. Yes, sir.

Q. Do I understand that you ascribe some portion of this flooding of the Bois de Sioux valley in 1916 to the presence of this embankment along county ditch #10?

Mr. Pinkney: We object to that question as not a correct statement of the witness's testimony.

A. Yes, sir, to some extent, although considerable water escaped across the embankment in the wash-out in 1916.

Mr. Palmer:

Q. Do I understand that you ascribe some portion of the
3520 flooding of the Bois de Sioux valley to the presence of these county ditches in Grant county running into the Five Mile creek and the county ditches in Stevens county running into the east fork of the Twelve Mile creek and the county ditches in the southern part of Traverse county and northern portion of Big Stone county running into the west fork of the Twelve Mile creek?

A. Those ditches all collect the flood waters and carry them into the Mustinka river and into the Mustinka state ditch much faster than the waters would be carried in a state of nature, and flood waters are carried down to Lake Traverse and discharged there in much larger volume in a much shorter time than they would be in a state of nature, and as I stated these ditches contribute to that.

Q. Substantially?

A. Quite substantially, yes, sir.

Q. Do I understand that you ascribe the flooding of Mr. Rogers' land in section 22 of Clifton and the land around there which has been testified to by the various witnesses as having been flooded in 1916 to the overflow of the Twelve Mile creek?

A. No, sir, rather to the overflow of Five Mile creek.

Q. To the overflow of Five Mile creek?

A. Yes, sir.

Q. And to what do you ascribe the overflowing of the Five Mile creek in that season?

A. The artificial construction in that locality.

Q. I understand you to say that in a state of nature those lands in section 22 and the surrounding lands are a part of the delta zone and were flooded?

3521 A. Yes, sir.

Q. What was the cause of that?

A. Those lands are comparatively level lands and in a state of nature covered with a growth of long grass. The channel of the Five Mile creek was tortuous and it overflowed its banks from a point above Mr. Rogers' land and down to the Mustinka and spread out over the country generally. The same is true of the Mustinka.

Q. In brief, then you ascribe it to the overflow of the Five Mile creek?

A. That is, Mr. Rogers' land?

Q. Yes.

A. Yes, sir, or rather to the accumulation of water in a locality where there was not sufficient natural channels to carry it off.

Q. Well, there are artificial channels now to carry it off as I understand you?

A. Yes, sir.

Q. But it didn't carry it off in 1916, you think the five mile creek overflowed then?

A. I think so. I don't understand that the channel of the Five Mile creek has been improved any and that there is quite a system of ditches running into it from the east. The channel is naturally only 3 or 4 feet deep, as I recall it, and it wouldn't take much water to overflow it.

Q. And you think the artificial conditions caused the overflow of the Five Mile creek in 1916 and the natural conditions caused the overflow of the Five Mile creek prior to 1916?

A. Yes, sir, but the difference was that in former years before the artificial construction was in the floods would remain much
3522 longer, would remain on the ground until they would evaporate a large part of the flood waters, while under present conditions the flood waters should run off in four or five days to a week or ten days at the most.

Q. The testimony appears to be that these waters remained upon the lands that I have mentioned through the entire season of 1916, creating a crop failure, Mr. Ralph.

A. I worked over that land and run levels in the months of May and June, 1916. There was—I drove all over the land, walked all over it, and there was very little if any of the lands in Redpath township——

Q. I am talking about Clifton.

A. Well, Clifton was even better,—that I couldn't walk over dry-shod with low shoes on in the month of June, 1916. The waters, while they may have flooded them, escaped readily.

Q. You would say then that there was no crop failure there in 1916?

A. There may have been a crop failure for the reason that they couldn't get crops in, or there may have been a flood that came up and stayed a few days and destroyed the crops, but I say the floods under the present conditions are carried off rapidly, comparatively so; where they used to remain for two or three months they now are carried off in a week or ten days, possible less.

Q. The testimony appears to be here, as shown by the tax records of the county of Traverse for 1895 and 1896, that this delta zone as you have described it and which you say was covered with aquatic grasses and formed a lake surface unfitted for habitation and in which there were not more than ten or twelve residents, con-
3523 sisted of about 132 improved and cultivated farms in the years 1895 and 1896 and the years prior thereto.

A. Now, in the first place to answer that question intelligently, I would like to know just what part of those 132 farms either lie partly without the delta zone or entirely without the delta zone, and then, if you consider 160 acres as a unit or a farm, there should be about 400 farms in that delta zone, and that 132 would be about one-fourth, and I think you will find that those 132 lie either around the border of the land that I have marked as Delta zone or partly without the delta zone and partly in, and that the other farms that were occupied were what you might call the high spots in the delta zone. But there are large areas, there is a large area in the delta zone, that has never been cultivated, that is in a wild

state today, notwithstanding the fact that the lands have been partly settled in that locality and settled around that locality for more than 40 years.

Q. I think the testimony is that 132 farms that I have mentioned lie altogether within the territory that you have designated here as the delta zone, Mr. Ralph?

A. Now, I have heard the names of some of those farmers read and I know of my own knowledge that they lie partly, the lands that they own, partly without the delta zone, and those lands might be cultivated and in fact the lands lying along the border, in dry seasons such as 1910 and 1911, that whole delta zone might be cultivated.

Q. So that the testimony might be substantially correct as it has been given here as to the presence of those farms and yet it would make *no* difference in your opinion?

3524 A. Yes, that testimony might be substantially correct. You could pick out probably 132 farms out of an area on which 400 160-acre farms could be placed and get those 132 farms located so that in the ordinary dry year a good part of them could be cultivated and their testimony I have no doubt is substantially correct, I wouldn't dispute it at all, but at the same time there is a very large area that in ordinary wet years in there, that was covered in a state of nature with water and in which aquatic grasses grew.

Q. And that condition exists to-day?

A. No, sir, it does not.

Q. I understood you to say there is a very large part of that area that was not cultivated even today?

A. No, sir, the ditches put in there are of recent construction and I should think they could cultivate a great deal more than they are cultivating, but there is a large area that is not cultivated.

Q. Is there any means by which those lands could be drained so that they would be suitable for cultivation in a year like the year 1916?

A. Yes, sir.

Q. But that would not be the method that has been adopted of putting these ditches east and west through the territory?

A. Yes, sir, that is the proper method.

Q. Then the lands should, from an engineering standpoint and theoretical standpoint, have been dry and have raised a crop in 1916?

A. No, sir, the system is not completed, the job could be carried out pretty much along the same lines that it has been
3525 started, and by completing the system and putting in a drainage works there as it ought to be put in, that is by making an impounding reservoir of Lake Traverse and using it for storing the flood waters, by improving the channel of the Bois de Sioux from Lake Traverse down to a point below the Rabbit where it would have sufficient outlet, and by improving the channel of the Rabbit river from where it leaves the Mustinka northward, then all of those ditches would function perfectly and the lands along them would be drained perfectly. Of course, not perfectly, but with the addition of tile drainage a perfect system could be worked

out and the whole country could be reclaimed without destroying any lands along the Bois de Sioux.

Q. The ditches now which extend through this so-called delta zone have not the outlet that they really ought to have and might have if the system were worked out as you outline it?

A. No, sir, they have not.

Redirect examination.

By Mr. Bronson:

Q. Now, Mr. Ralph, counsel asked you a question concerning the contribution of these ditches to the flooded conditions of Lake Traverse and the Bois de Sioux in the years we are talking about. To what extent would they have contributed, if any, if the state constructions as artificially made had not been constructed?

Mr. Palmer: That is objected to as not redirect examination, not a subject of expert testimony, the witness has not shown
3526 himself competent to testify and repetition and no foundation laid.

A. They would have contributed only to a very small extent. The result would have been that a large amount of water would have laid in the detaining basin and evaporated and the larger amount would pass off by way of the Rabbit river.

Mr. Bronson:

Q. Counsel asked you a question concerning the cause of the flood or existence of the flood or flood conditions on this Rogers land in that vicinity which was mentioned to you concerning testimony of Mr. Rogers in one question heretofore. I call your attention again to the Five *Five* Mile creek and Twelve Mile creek and ask you to state to what extent the flooding, if I might use the term flooding, or the surcharge of the Five Mile creek and the Twelve Mile creek in their upper reaches, by these artificial conditions would serve to make a flood, or to have high water on said Rogers' land at the times stated?

A. Surcharging of the Five Mile creek and Twelve Mile creek would result in backing the water up the ditches that now run into these creeks and would make them less efficient, more liable to overflow.

Q. Counsel has referred in some questions to you concerning the flooded condition of this delta zone territory during the year 1916 and of the failure of crops apparently based upon the theory that lands were flooded throughout the summer of 1916. Now, assuming, Mr. Ralph, that during the month of July, 1916, the discharge records at Wheaton, Minnesota, covering the Mustinka river in the year 1916 showed a second feet discharge for the total month
3527 of 25,446 second feet, and that for the month of August, 1916, the same discharge records show a total discharge of only 3,357 second feet, and for the month of September, 1916, showed a total discharge of only 1,322 second feet, and for the

month of October, 1916, showed a total discharge of only 959 second feet, and for the month of November, 1916, showed a total discharge of only 783 second feet—this, I understand, being the monthly discharge?

A. Yes, sir?

Q. I will ask you to state what these records prove if anything, or tend to prove, as to whether or not these artificial conditions in connection with these drainage channels that we have talked about in this evidence did drain off these flood waters?

Mr. Palmer: That is objected to as a repetition, not redirect examination, not the subject of expert testimony, argumentative and assuming facts not established by any evidence and the witness not shown himself competent to testify.

A. They show that the usual June rains in the Mustinka watershed had been carried off rapidly and had been discharged in large volumes down the Mustinka river in a short period of time and the low rate of run-off in the following months indicates that the watershed was well drained in a short period instead of draining it gradually as it would in a state of nature.

Mr. Bronson:

Q. In other words, when in the month of August, 1916, the discharge records at Wheaton showed a second feet discharge for the month of 3,357 second feet, would there be in this delta zone
3528 at that time a flooded condition at the cut-off ditch and a flooded condition of the Mustinka river around the bend?

Mr. Palmer: That is objected to as repetition and not the subject of expert testimony; witness has not shown himself competent to testify, no foundation laid.

A. No, sir.

Mr. Bronson: If we have not already done so, we offer in evidence the certified statements of the county auditor of Richland County, North Dakota. We also offer in evidence the following: Legislative findings of the committee of the House, page 1272 of the House Journal, 1909, motion made in the House for the committee to hear the petition of settlers, shown on page 577, House Journal, 1909, appointment of the committee to hear such petition page 672, House Journal, 1909, conference committee report on the same, House Journal, page 1371, and the proceedings in connection with it, House Journal, April 8, 1909, page 1512, Senate Journal, page 1411, April 22, 1909, Senate Journal, 1909, page 1411, dated April 21, 1909.

3529 JULIUS A. SCHMAHL, being duly sworn in behalf of defendant, testified as follows.

Examined by Mr. Palmer:

Q. What official position, if any, do you hold in the State of Minnesota?

A. Secretary of State.

Q. How long have you been Secretary of State of Minnesota?

A. 11 years, 1 month and 16 days.

Q. Your term of office began when?

A. First Tuesday after the first Monday in January of 1907.

Q. Under the laws of the state what officials compose the state drainage commission?

A. The Governor, Auditor and Secretary of State.

Q. And that has been the law practically all the time in the history of the state?

A. Well, ever since I have been Secretary of State.

Q. Are you familiar with the provisions of Chapter 138 of the General Laws of Minnesota for 1911?

A. Is that the Mustinka Ditch Law?

Q. Yes.

A. I am.

Q. Was the last section or part of the Mustinka state ditch constructed under that law while you were a member of the state drainage commission?

Mr. Pinkney: We object to that as incompetent and immaterial.

A. Yes, it was.

Mr. Palmer:

3530 Q. During the period from 1900 to 1913 it has been testified here by George A. Ralph that he was the state drainage engineer; that is correct, is it?

A. Well, I can only answer that he was from 1907 to April, 1913.

Q. And by whom is the state drainage engineer appointed?

A. Elected by the three members of the state drainage commission.

Q. You recall then that Mr. George A. Ralph was drainage engineer, at the time of the passage of Chapter 138, Laws of 1911, and up to the time of the construction of such part of this ditch as was constructed up to April, 1913?

A. He was.

Q. It has been testified here by Mr. Ralph that he was at all times opposed to the construction of this last part of the Mustinka state ditch under the legislative act of 1911 what is the fact as to that?

Mr. Pinkney: Wait a minute. What is the purpose of this question; is that for an impeaching question, Mr. Palmer? If that is the purpose of the question, we object to it as no proper foundation laid, incompetent, immaterial and assuming a statement not in the evidence.

Mr. Palmer:

Q. I will ask you if you know what the fact is as to that Mr. Schmahl?

Mr. Pinkney: Same objection.

A. Yes.

Mr. Palmer:

Q. What is the fact as to that?

Mr. Pinkney: Same objection.

A. Mr. Ralph never entered any objection to the construc-
3531 tion of this work before the state drainage commission or to me personally.

Mr. Bronson: We move to strike out the answer as not responsive to the question.

Mr. Palmer:

Q. Do you know whether or not he recommended to the state drainage commission the construction of this ditch? Answer yes or no.

A. You don't state the time.

Q. At any time, do you know whether he at any time recommended to the State drainage board the construction of this ditch?

A. Yes, sir, after the law was passed.

Q. After the passage of the act; what was his recommendation?

Mr. Pinkney: We object to that for the reason—Was that recommendation in writing or to you personally or to members of the board in person?

A. To the members as a commission.

Q. Was it made in writing or orally?

A. It is so far back now, judge, I couldn't state. The secretary's record, the State Auditor being secretary, will state that definitely.

Mr. Pinkney: We object to it as not the best evidence, it is apparent it was made in writing.

Mr. Palmer: I will let the question stand.

(Question is read by the reporter.)

A. That the work be proceeded with according to the act of 1911.

Q. And was it his recommendation that it be proceeded with and carried out in the manner in which it was carried out?

3532 Mr. Pinkney: We object to that for the same reason, it is self-evident that the recommendations, if any were made, were in writing, it is not the best evidence.

A. Yes.

Mr. Palmer:

Q. The witness, Ralph, has testified that he recommended the construction of this work down the Rabbit river, into and down the Rabbit, Mr. Schmahl. I will ask you whether or not he did so recommend to the state drainage commission?

Mr. Pinkney: Same objection.

A. Never heard of such recommendation, never heard the Rabbit river mentioned, hadn't known that it was in that community.

Mr. Palmer:

Q. He has further stated that he recommended the creating of Lake Traverse into an impounding reservoir and the improvement and dredging out of the Bois de Sioux river to the mouth of the Rabbit river. Did he so recommend to the state drainage commission?

Mr. Pinkney: We object to that for the same reasons.

A. I can't recall any such recommendation. It is possible and even probable that Mr. Ralph did make some reference to the impounding reservoir in that section at some time but I think not in connection with this work.

Mr. Palmer: At this time the defendant offers in evidence Chapter 221 of the General Laws of Minnesota for 1893.

Mr. Pinkney: Objected to as incompetent, immaterial and irrelevant.

Mr. Palmer: And Chapter 164, General Laws of 1895.

Mr. Pinkney: Same objection.

3533 Mr. Palmer:

Q. You understand the general purpose of the construction of the first section of the Mustinka ditch, which was in 1896—or do you understand?

A. I do.

Q. Just in general, what was it?

Mr. Bronson: That is objected to as calling for a conclusion of the witness and incompetent and immaterial.

A. That was for the purpose of draining the state swamp lands in that section.

Mr. Palmer:

Q. And do you understand in general the purpose of the construction of the last section or part of the Mustinka state ditch under the Act of 1911?

Mr. Pinkney: Same objection.

A. I do.

Mr. Palmer: What was it?

Mr. Pinkney: Same objection.

A. That was for the furtherance of the drainage of lands in that section originally, if not then, state swamp lands.

Mr. Palmer:

Q. And do you know whether the first section or portion of the Mustinka state ditch was constructed by the state drainage commission pursuant to these Acts, Chapter 221 of the General Laws of 1893 and Chapter 164 of the General Laws of 1895, and for the purposes therein specified, to wit, the drainage of state swamp lands from your knowledge of those ditches after you became secretary of state and a member of the state drainage commission?

Mr. Pinkney: Same objection and for the further reason it does not make any difference whether it was constructed in pur-
3534 suance of these acts.

A. Yes.

Mr. Palmer:

Q. What is the fact as to that?

Mr. Pinkney: Same objection.

A. They were.

Cross-examination.

By Mr. Bronson:

Q. Are you familiar, Mr. Schmahl, with the actual construction of these ditches?

A. As they exist at the present time?

Q. Or as they did exist?

A. Prior to the Act of 1911?

Q. No, any of these ditch constructions that you have mentioned; you know about the first section of the ditch and the second section because you were on the state drainage commission at the time they were accepted?

A. Not the original; during my term of office, yes, absolutely.

Q. On the grounds and seeing it?

A. Several times.

Q. And familiar with the first ditch by reason of being on the ground and seeing it?

A. The first construction?

Q. Yes.

A. No.

Q. Never saw it?

A. Not until after the second work was done or partially done.

3535 Q. Were you there when the second work was started?
A. I was.
Q. And were you there during the time it was being carried on.
A. Several times.
Q. Were you there when it was finished?
A. I was there when the——
Q. Or about the time when it was finished?
A. —when the final examination took place.
Q. So you saw the first section of the ditch?
A. I did.
Q. How many acres of swamp land were being drained?
A. You will have to get a better man than I to state that.
Q. How many acres of state land were drained?
A. I couldn't state.
Q. You never computed it?
A. No, sir.
Q. You are familiar with the application of the settlers around Wheaton, near Wheaton, in this territory that is in controversy here, upon the petition they made?
A. Am I familiar?
Q. With the petition they made to the legislature?
A. I was not.
Q. You know they did make a petition?
A. I do not.
Q. Do you know whether or not a committee was appointed to hear their petition?
A. I think there was, the House journal of 1911 will give you definite information on that.
3536 Q. And will the House Journal of 1909 also give me information on that?
A. Yes, sir, because Governor Johnson vetoed that proposition.
Q. In 1909 there was some complaint coming from that district about flood conditions?
A. I can not state.
Q. Do you recall or have any recollection now of any committee being here in 1909 before the legislature?
A. I have not, now.
Q. Have you any recollection now of any action being taken by the legislature in the year 1909 concerning the relieving of flood conditions in this region where these ditches had been constructed?
A. I think an appropriation was made for this purpose and vetoed by Governor Johnson.
Q. You were on the drainage commission at that time?
A. I was.
Q. And was it brought to your knowledge in a general way in the nature of a complaint being made?
A. I can't recall any complaint.
Q. Mr. Ralph was drainage engineer of your board at that time?
A. He was.
Q. And had your drainage board talked at different times in session and otherwise of some means of alleviating the conditions up there?

A. No, the only statement that I can recall was the rather pert statement of Governor Johnson when he vetoed the act that he got even with old man Spooner.

3537 Q. How did Governor Johnson veto that bill?

A. Cut it out of the general appropriation items.

Q. Wasn't the bill a pocket veto?

A. The bill itself may have been but I think the appropriation was cut out of the general appropriation, the records in our office will show.

Q. That bill if it was a pocket veto would now be in the Governor's office, wouldn't it?

A. Not necessarily—well, it should be there, yes sir, if it was a pocket veto occurring after that session adjourned.

Q. You are custodian of all the bills that have passed?

A. Of all that are passed and approved by the Governor.

Q. Are you also the custodian of all the records of the proceedings of the state drainage commission?

A. No, sir.

Q. Who is?

A. State Auditor is secretary of the board, and I fancy I will have to include with that the engineer or acting engineer of the commission.

Q. And who is he now?

A. E. V. Willard is now the acting engineer.

Q. How long has he been engineer?

A. Ever since Mr. Ralph has retired as engineer he has been acting engineer.

Q. Has he been in charge of all the work of your board ever since?

A. Yes, sir.

Q. Your drainage commission did have charge of the ditch up there?

3538 A. The Mustinka?

Q. Yes, sir.

A. Yes, sir.

Q. And did have charge of it all the time?

A. Yes, sir.

Q. Did this come from your office, Defendant's Exhibit 5; is that one of the records of your office?

A. I would say, no.

Q. Where are those committee reports of the House or Senate kept?

A. Invariably—I am now giving you the benefit of four years as chief clerk of the House, invariably they are turned over to the chief clerk, where it is a House report, and the secretary of the Senate where it is a Senate report. The chief clerk of the House and the Secretary of the Senate are directed by law to turn over the last day of the session or within a certain number of days thereafter, giving them time to clean up their work, all of the records, documents, etc., to the document clerk's office in the secretary of state. That work has been done only in part since 1907.

Q. Do you know whether you have the original of that in your office, the conference committee's report of 1909?

A. I would say not.

Q. In 1909 no bill was passed for the construction of the Mustinka section of the state ditch approved by the Governor?

A. No, it was not.

Q. But in 1911 Chapter 138 was enacted and prior to the enactment of the same there was considerable discussion concerning the propriety of enacting it, was there not, before the committee
3539 and before your drainage commission?

A. My recollection is that there was before the House and the Senate, that prior to its enactment the drainage commission, unless it directed Mr. Ralph to make a survey of that kind, did not take any part in the controversy. It may have directed Mr. Ralph to make a survey for legislative reference.

Q. Do you know what the attitude of Mr. Ralph was before the enactment of the law?

A. I think it was favorable.

Q. To the passage of the act?

A. To the passage of the act? Oh, I don't want to say yes or no definitely to that. There was no opposition.

Q. You don't know exactly what his attitude was in that regard?

A. No.

Q. As I understand when the act was passed, it did not prescribe exactly the method by which the ditch had to be constructed, the act shows that, I understand, it didn't have to go the way it did go?

A. That was left entirely to the engineer and commission.

Q. And subsequent to the enactment of Chapter 138 Laws of 1911, at some time the drainage commission must have adopted the plan that was subsequently adopted by which this ditch was constructed?

A. You mean following the enactment?

Q. Yes. That is correct, isn't it?

A. I think so.

3540 Q. And between the time of the passage of the act and the time of the adoption of the procedure to put it into effect the ditch that was constructed, that is, the second section of the ditch, there was some litigation over that act, wasn't there?

A. The drainage commission, on the advice of the attorney general, my recollection is, refused to proceed. Action was brought before Judge Flaherty, who issued a decree directing the commission to proceed. The commission while feeling itself not amenable to an order of the district court, concluded and unanimously, voluntarily and enthusiastically decided that he could proceed with the work.

Q. Wasn't it the State Auditor who refused to go ahead?

A. I think not, sir, I think not.

Q. And it was Representative Spooner and Senator Rustad that wanted the ditch to go in the way it did go, or was in the petition?

A. That is, to be built along the line——

Q. Of the petition?
A. Yes, sir.
Q. And they started this action to compel it?

Mr. Palmer: That is objected to as the witness has not shown himself competent to testify, not the best evidence the proceedings themselves are in evidence.

A. I can't state who was the applicant in that case before the court?

Mr. Bronson:

Q. And before the proceeding was determined by Judge Flaherty as it was subsequently determined, do you know what the attitude of Mr. Ralph was?

A. I think so.

3541 Q. And did he appear as a witness in the hearing?

A. Where?

Q. Before Judge Flaherty?
A. I don't know.
Q. And you know whether or not he opposed the construction of the ditch in that hearing?
A. I do not.
Q. Do you know whether or not his attitude in the matter between the time of the passage of the act up until Judge Flaherty decided was in opposition?
A. I think at all times favorable before the board.
Q. What is that?
A. At all times favorable before the drainage commission. You will understand Mr. Ralph occupied a position as an employe of the commission. While he had the right to make recommendations he was under the direction of the commission and his attitude on that proposition as well as on practically every other drainage proposition that possessed any merit at all was always favorable. He was regarded as a drainage booster of that period.
Q. Well, do I understand that before Judge Flaherty rendered a writ of mandamus that your board was favorable to putting in that ditch in accordance with the petition of Rustad and Spooner?
A. Absolutely favorable but we doubted the legality of the proceedings of the act in question; absolutely favorable, sir.
Q. You had various ways in which you could put the ditch in, you didn't have to go that way, did you?

A. By legislative enactment?

3542 Q. Yes.

A. It required, as we understood it, absolute legislative enactment in this case.

Q. As you understood it, as a member of the drainage board, you had to put this ditch in just in the way it was put in; is that your understanding?
A. You mean as to the——
Q. The manner in which it was constructed and the location?

A. That it was to be in the neighborhood of the Mustinka creek, or river?

Q. As I understand it, your understanding was that this ditch had to be constructed at the same location where it was constructed?

A. Following nearly those lines.

Q. It could have been constructed down the Rabbit river, couldn't it, and still be within the act as you understood?

A. We never heard anything else but the natural channel of the Mustinka.

Q. I am asking if your understanding——

A. I want to be frank. I have lived in Minnesota all my life and I am pretty thoroughly acquainted with the geography of the state and I had forgotten there was a Rabbit river in that neighborhood. I can't remember it was ever mentioned.

Q. Are you familiar with Chapter 138, Laws of 1911?

A. Yes, sir.

Q. You were not present when the action was heard down there before Judge Flaherty?

3543 A. I was not, no, sir.

Q. You don't know what attitude Mr. Ralph took in that proceeding?

A. No, my opinion of it was and I know that Governor Eberhart of that period and Auditor Iverson and myself had this feeling, to let the proceedings go by default. I can't recall that any one was even instructed to represent the state in any serious manner.

Q. Do you know that the Wheaton papers along about that time were roasting Mr. Ralph for his attitude in opposition to putting in this construction?

Mr. Palmer: That is objected to as not the best evidence and wholly immaterial.

A. No, my attention was never called to that, Mr. Bronson.

Mr. Bronson:

Q. Have you records containing full minutes of the proceedings?

A. Just in as brief and concise a manner as possible, those records are kept, sir.

Q. And you don't recollect whether there is any recommendations of record of Mr. Ralph's?

A. I do not, the records undoubtedly show that clearly.

Q. Whose records?

A. The secretary's or State Auditor's records.

Q. Either yours or——

A. Only the secretary of the board, the secretary of the board being the State Auditor.

Q. Mr. Iverson?

A. Mr. Iverson, at that time, yes, sir.

3544 (At this time recess was taken until Feb. 18, 1918, 10 o'clock a. m.)

February 18, 1918, at 10 a. m.

J. E. BOBLETER, being duly sworn in behalf of defendant, testified as follows.

Examined by Mr. Palmer:

Q. What is your occupation?
A. State land clerk in the State Auditor's office, State of Minnesota.
Q. How long have you been such?
A. About, I have been there about eight years.
Q. As state land clerk have you charge of the records of the State Auditor of Minnesota showing the various classes of state land at any time granted to the State of Minnesota by the United States?
A. I have.
Q. Have you prepared an accurate and complete list of the various classes of State lands of the State of Minnesota lying in the territory known as the Mustinka river watershed and the area adjacent thereto?
A. I have.

(Defendant's exhibit 116 is marked).

Q. I direct your attention to Defendant's Exhibit 116, this map, and ask you what that shows?
A. The map shows the various state lands in the area referred to.
Q. And will you state how the various classes of
3545 state lands are designated upon this Exhibit 116?
A. State swamp lands are indicated by solid red. State school lands are indicated by red outline or red border line. Indemnity school lands are indicated by red border with cross lines running from corner to corner diagonally converging at the center. School lands transferred from internal improvement lands are indicated by a red border with a dot in the center. Internal improvement lands are indicated by red border with horizontal bars running across east and west. School lands unsold in 1896 are indicated by red border with a letter "S" in the center. Swamp lands unsold 1896 are indicated by red border with lines running diagonally from corner to corner with a single horizontal bar running east and west. Salt spring lands are indicated by red border with horizontal bars running north and south.

Stipulation.

It is stipulated that the va-ious classes of state lands of the State of Minnesota lying within and adjacent to the Mustinka watershed may be considered as proved by the testimony of this witness, and the map Defendant's Exhibit 116, without the introduction of the records of the State Auditor's office or the certified lists made therefrom. Further that said state lands may be shown by appropriate markings as designated by the witness upon defendant's ex-

hibit 7 in the record when printed without the reproduction of defendant's exhibit 116; that exhibit 116 is offered in evidence by the defendant, that no objection is made by the complainant to the foundation or authentication thereof but complainant interposes the objection that the entire evidence is irrelevant and immaterial to the issues in this case.

3546

Cross-examination.

By Mr. Pinkney:

Q. How did you ascertain the boundaries of the watershed within which these lands lie?

A. From descriptions furnished me by the attorney general's office.

Q. Of your own knowledge, do you know whether these lands you have indicated on defendant's exhibit 116, include more or less than all such lands—it includes only the lands of which the attorney general's office furnished the descriptions?

A. Yes, sir.

Q. You don't mean, Mr. Bobleter, that these lands that you have indicated on this map include all of the lands within the watershed?

A. Only the state lands shown on the lists.

(Defendant's Exhibit- 117 and 117*a* to 117*f* marked.)

Mr. Palmer: The defendant offers in evidence exhibit 117 together with exhibits 117*a* to 117*f* inclusive being certified copies of annual summary climatological data U. S. Department of Agriculture, Weather Bureau, to the year 1909, and the annual summaries from 1909 to 1916 inclusive and covering eastern South Dakota; except that no copy of the annual summary for 1911 was available to the Weather Bureau, and it is stipulated that the Court may refer to the original thereof in the files of the weather bureau. Said summaries being data used by the witness Bass in the preparation of the charts Defendant's exhibits 76 and 77, save that the complainant interposes the general objection that the evidence offered is immaterial and irrelevant.

3547

(Defendant's Exhibits 118, and 118*a* to 118*h* marked.)

Mr. Palmer: Defendant further offers in evidence exhibit 118 together with exhibits 118*a* to 118*h*, inclusive, being certified copies of annual summary, climatological data U. S. Department of Agriculture, Weather Bureau to 1909, the annual summaries from 1909 to 1916, inclusive, covering Eastern North Dakota and North Dakota section, containing data used by the witness Bass in the preparation of charts, defendant's exhibit- 76 and 77. Complainant interposes the general objection that the evidence offered is irrelevant and immaterial.

(Defendant's Exhibits 119 and 119*a* to 119*h* marked.)

Mr. Palmer: Defendant offers in evidence defendant's exhibits 119 and 119*a* to 119*h* inclusive, being certified copies of the clima-

tological data U. S. Department of Agriculture, Weather Bureau to 1909, and annual summaries 1909 to 1916, inclusive, covering southwestern Minnesota and Minnesota section containing the data used by the witness Bass in the preparation of the charts mentioned. Complainant interposes the general objection that the evidence offered is irrelevant and immaterial.

(Defendant's exhibit 120 is marked.)

Mr. Palmer: Defendant offers in evidence defe-danat's
3548 Exhibit 120, being a certified copy of Stream Gaugings and discharge measurements by United States Geological Survey on the Mustinka river near Wheaton during the year ending September 30, 1917.

Both parties rest.

3549 Supreme Court of the United States, October Term, 1916.

No. 27, Original.

STATE OF NORTH DAKOTA, Complainant,

vs.

STATE OF MINNESOTA.

Report of Commissioner.

I hereby certify that pursuant to the terms of the Order of this Court hereto attached, bearing date the 30th day of October, 1917, I, as Commissioner therein designated, took the testimony offered by and on behalf of the complainant, State of North Dakota, and the defendant, State of Minnesota, at such times and places as was mutually agreed upon between counsel for the respective parties; that such testimony was taken by and with the assistance of two competent stenographers furnished by the respective parties, and the foregoing transcript of 3426 pages of typewritten matter contained in eight volumes, marked respectively Volumes I, II, III, IV, V, VI, VII and VIII is a full, true and correct transcript of the testimony taken and proceedings had before me as Commissioner, and that the same, together with the Exhibits therein referred to, represent all the evidence offered or introduced by or on behalf of each of said parties; that complainant's Exhibits are
3550 numbered 1 to 49, inclusive and defendant's Exhibits are numbered 1 to 108, inclusive, and 110 to 120, both inclusive.

I certify further that prior to their examination each of the said witnesses was duly sworn by me to testify the whole truth and nothing but the truth.

WALLACE B. DOUGLAS,
Commissioner.

Dated at St. Paul, Minnesota, October 25, 1918.

3551 Supreme Court of the United States, October Term, 1916.

No. 27, Original.

THE STATE OF NORTH DAKOTA, Complainant,

vs.

THE STATE OF MINNESOTA.

On consideration of the motion of a counsel for the complainant and the stipulation of counsel for the respective parties to this cause.

It is now here ordered by the court that Wallace B. Douglass, Esquire, of St. Paul, State of Minnesota, be, and he is hereby, appointed the Commissioner to take and return the testimony in this cause to this court, without findings of fact or conclusions of law; that he shall be allowed not to exceed ten dollars per diem for his compensation, together with his actual traveling and reasonable hotel expenses, an itemized statement of which shall be submitted to this Court in his final report, the payment of such compensation and expenses to be made in such manner as the Court may hereafter direct.

It is further ordered that the complainant may take testimony at such place as it may indicate between June 1, 1917, and August 1, 1917, upon giving ten days' notice of the time and place to counsel for the defendant, and that the defendant may take testimony at such place as it may indicate between August 1, 1917, and October 1, 1917, upon giving ten days' notice of the time and place to the counsel for the complainant, excepting that the com-
3552 plainant may have an opportunity within such time above stated to present in rebuttal expert testimony in engineering and hydraulics immediately after the close of defendant's testimony in that regard.

It is further ordered that all direct testimony of expert nature relating to engineering and hydraulics shall be taken on behalf of the complainant during the month of July, 1917, and in rebuttal immediately after the close of defendant's evidence in that regard during the month of August, 1917, and in surrebuttal immediately after the rebuttal testimony in that regard of the complainant, except as may otherwise be ordered by the Court.

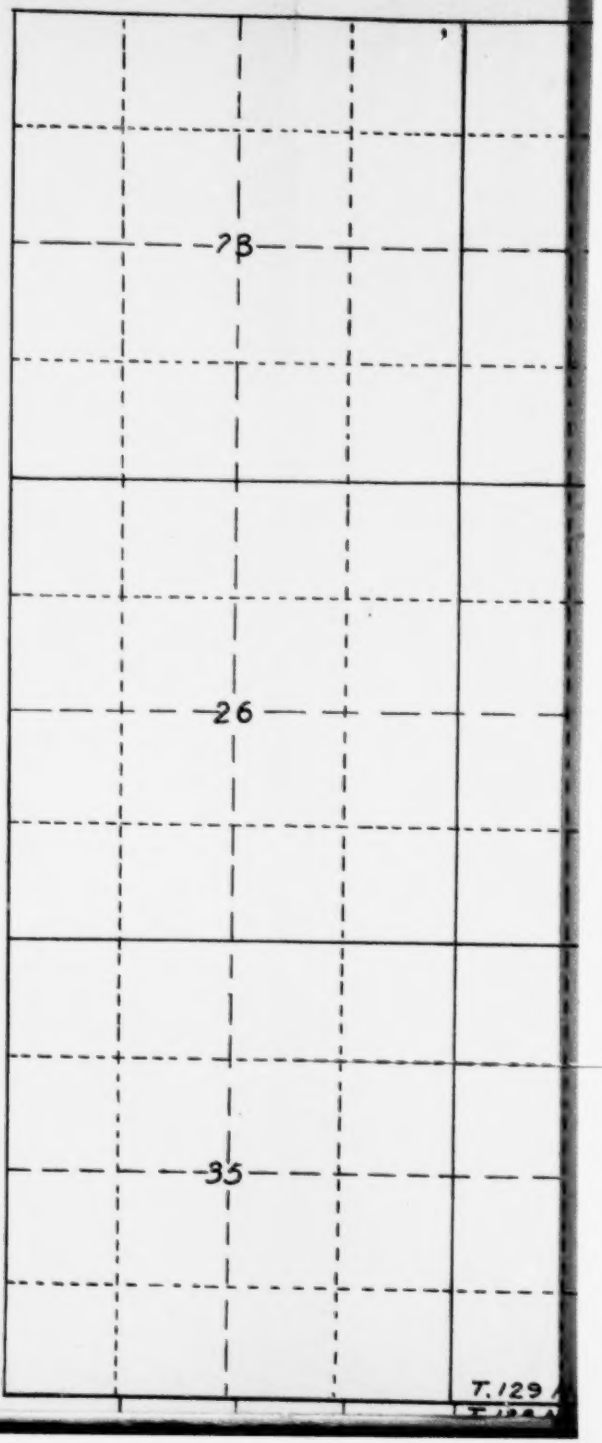
It is further ordered that the complainant may take testimony in rebuttal between October 1st and October 15th, 1917, and that the defendant may take testimony in surrebuttal between October 15th, 1917, and November 1st, 1917, at such times and places as they may respectively indicate by ten days' notice to opposing counsel.

It is further ordered that the above set forth times designated for taking testimony may be varied by consent of counsel, which shall have the same effect as an order entered by this Court when entered upon the record before the Commissioner.

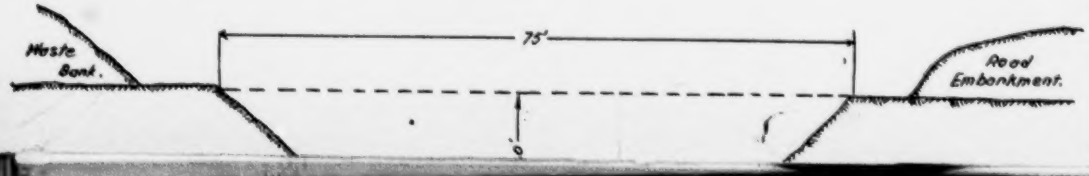
MAP OF
A PORTION OF
TRAVERSE COUNTY~MINNESOTA
SHOWING
NATURAL AND ARTIFICIAL
DRAINAGE CHANNELS.

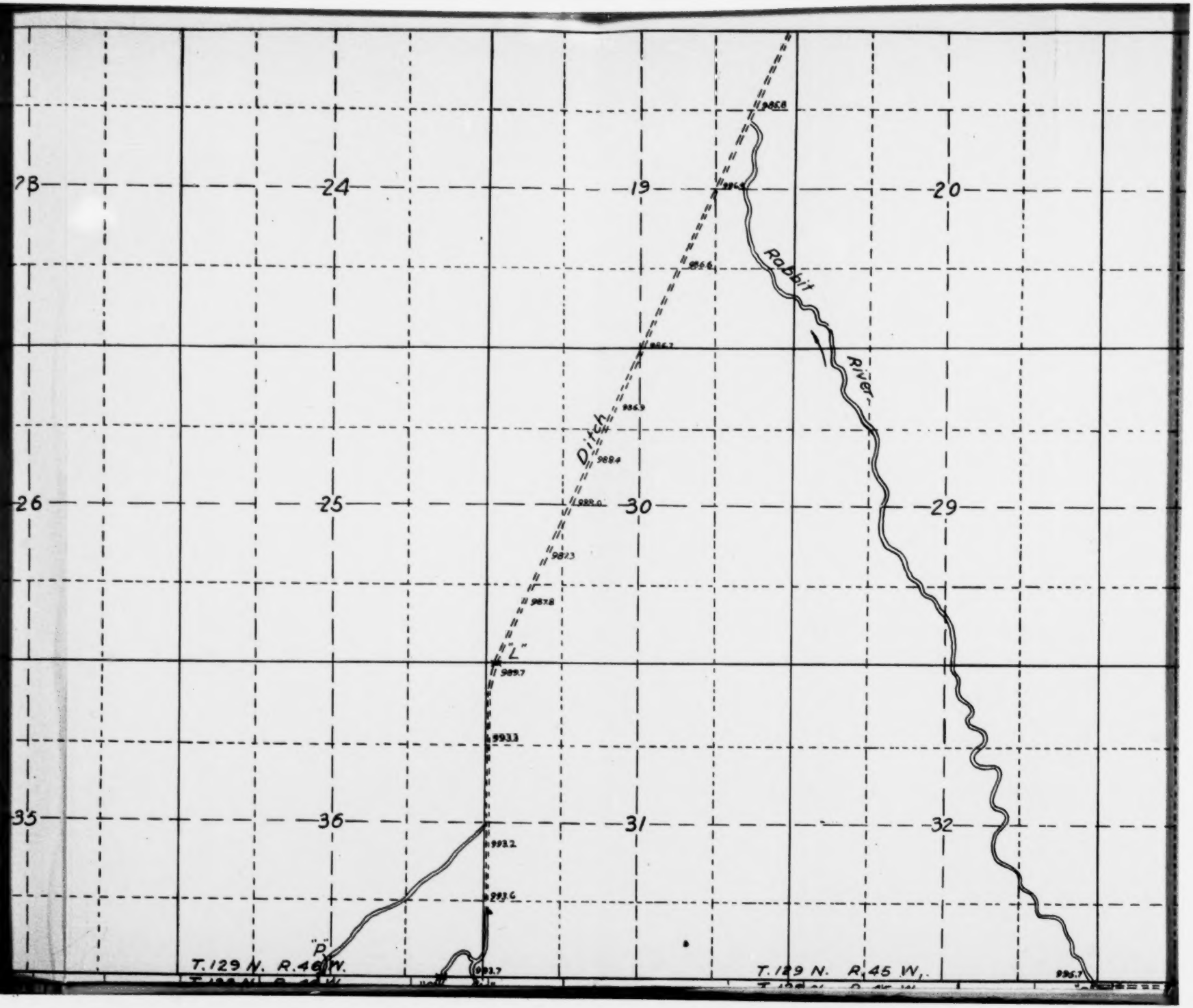
Scale 1 in. = 1000 ft.

George A. Ralph.
Consultin Engineer.



Cross Section of
Mustinka Cutoff Channel
at point marked "N".
Scale 1 in. = 10 ft.

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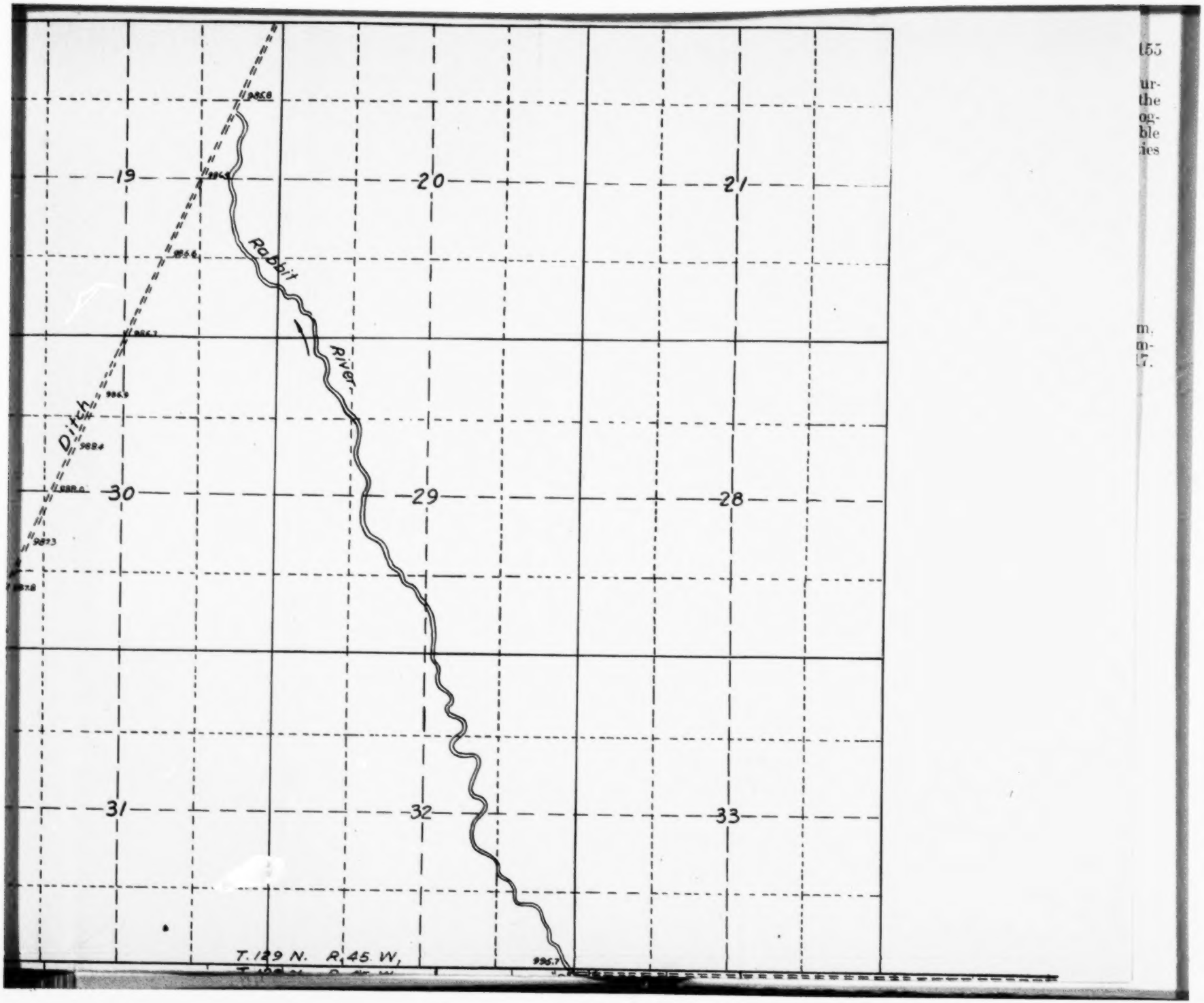
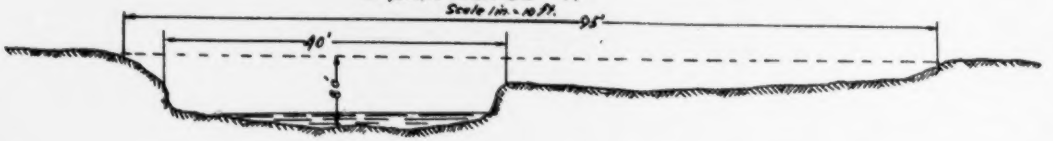
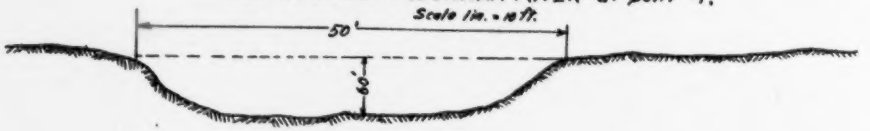
Rabbit
River
Ditch
"L"
"R"
T. 129 N. R. 46 W.
T. 129 N. R. 45 W.


19
20
21
30
29
28
31
32
33
Rabbit
River
Ditch
T. 129 N. R. 45 W,

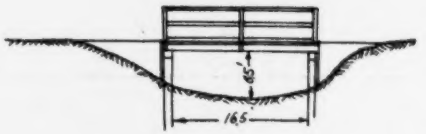
CROSS SECTION OF
MUSTINKA RIVER
at point marked "M."
Scale 1 in. = 10 Ft.



CROSS SECTION OF
OLD CHANNEL - MUSTINKA RIVER - at point "A."
Scale 1 in. = 10 Ft.

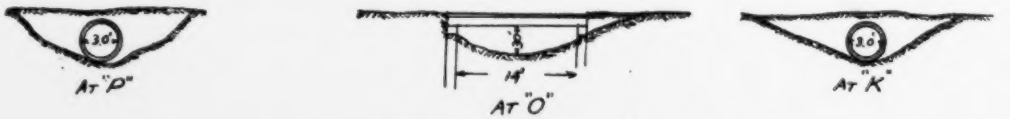


CROSS SECTION OF
RABBIT at point marked "L"
Scale 1 in. = 10 Ft.



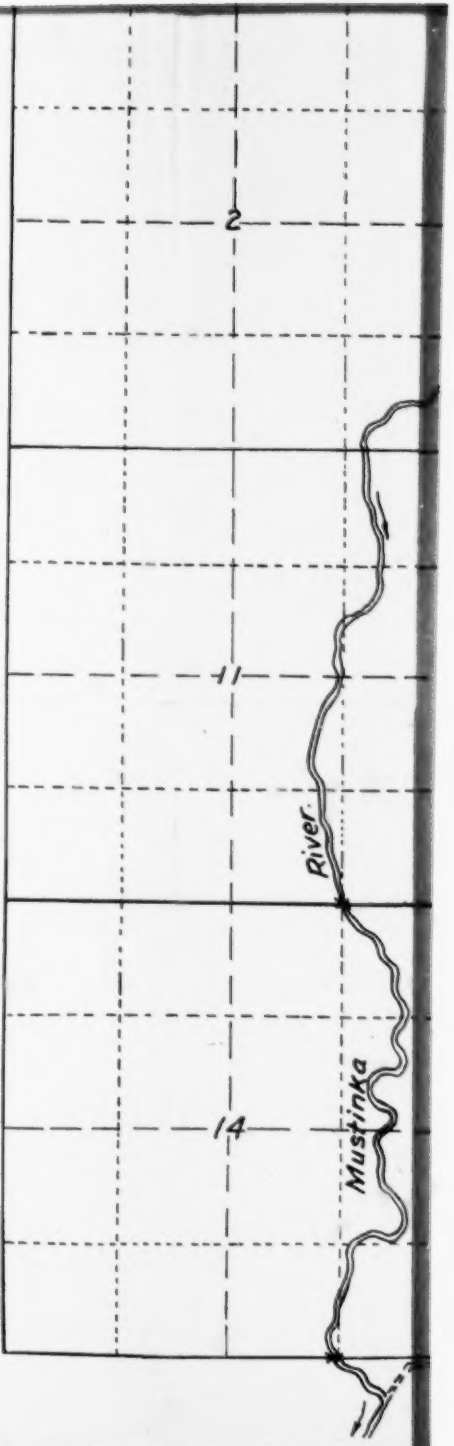
CROSS SECTION OF
DITCH & DIKE at point "B"
Scale 1 in. = 10 Ft.

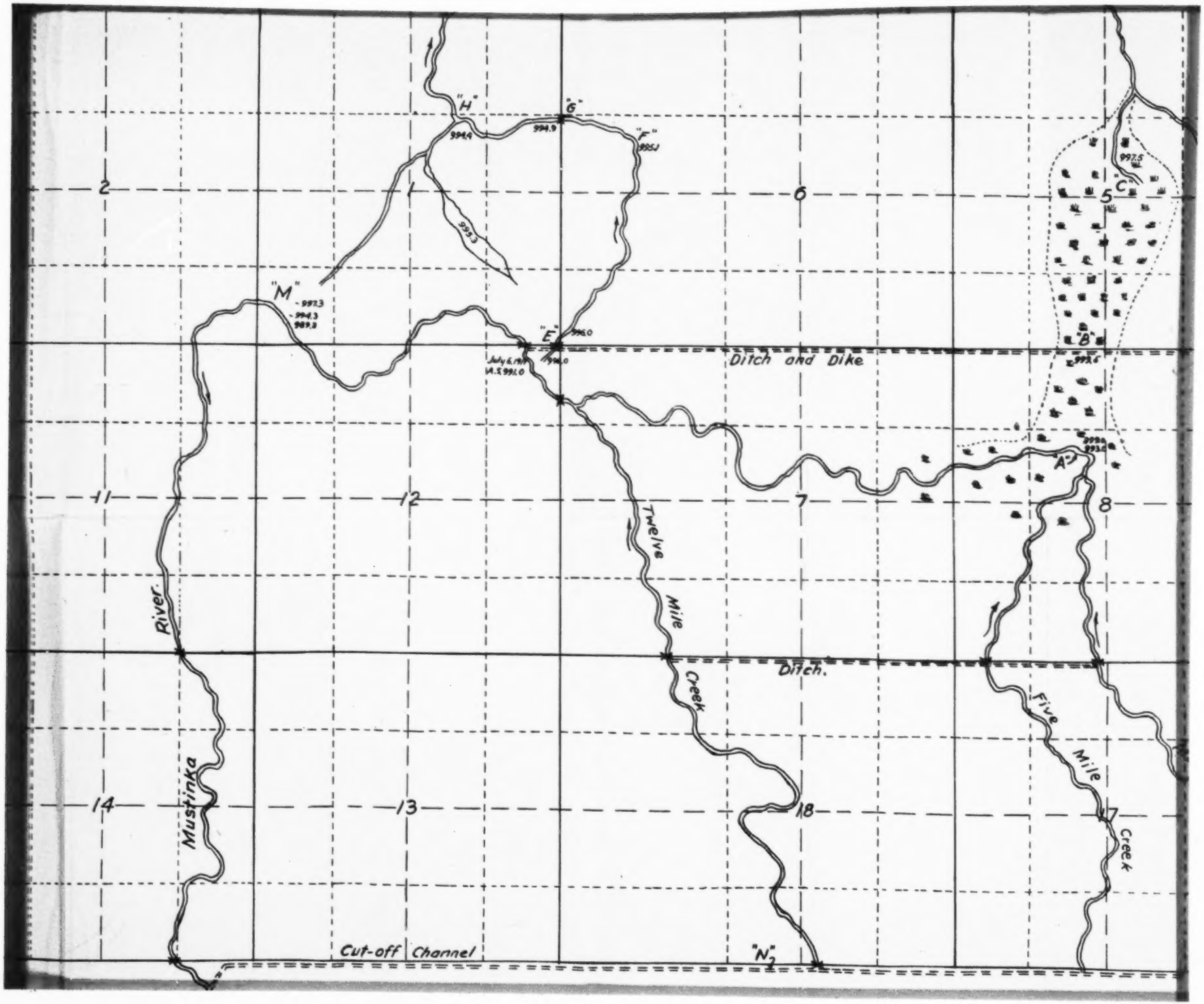
CROSS SECTION OF
RABBIT RIVER at "D."
Scale 1 in. = 10 Ft.

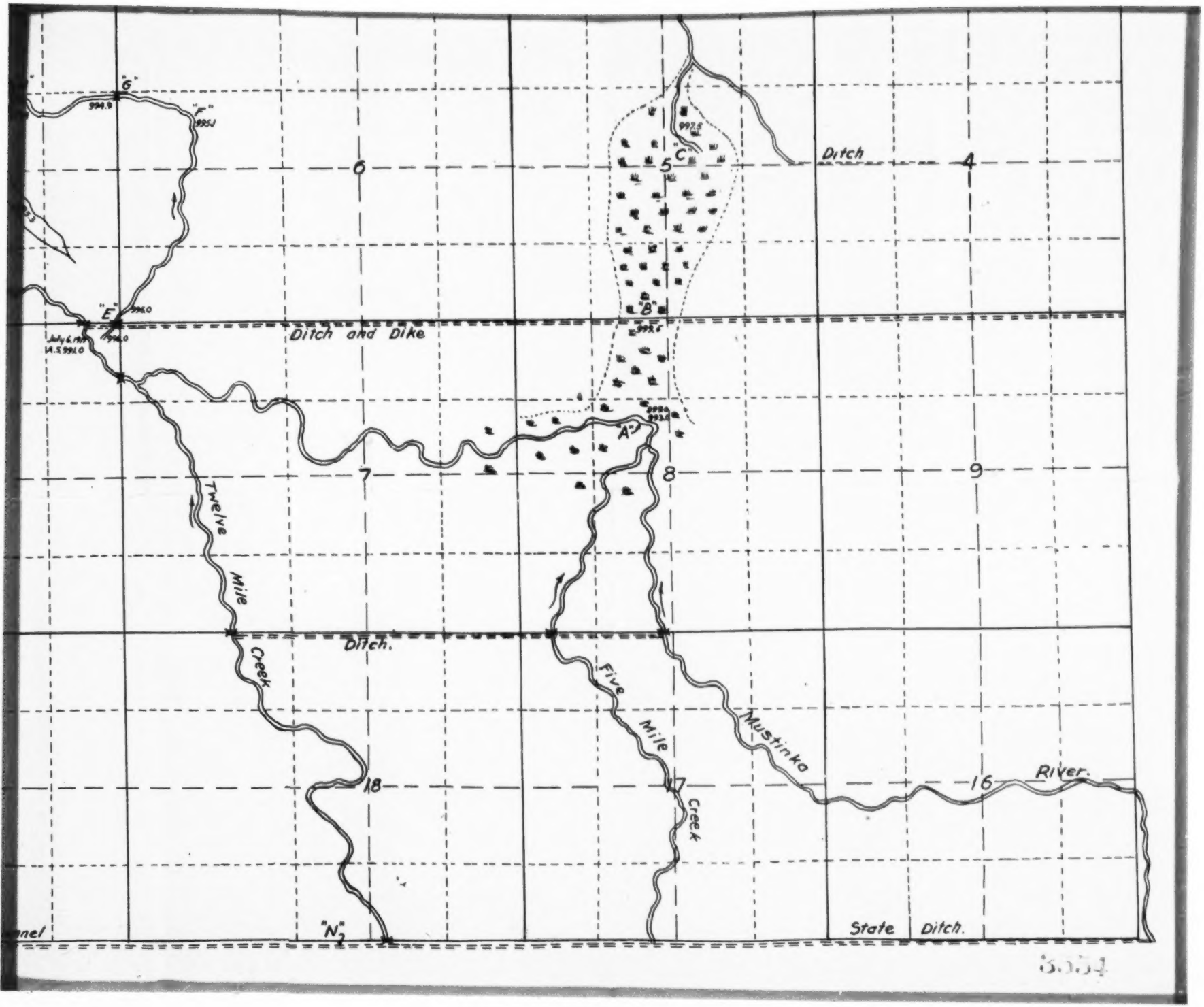


OPENINGS IN HIGHWAY ON LINE BETWEEN SEC's. 1 & 36.
Scale 1 in. = 10 Ft.

Duplicate — Complaints
Exhibit 5




"H"
994.4
"G"
994.9
"F"
995.1
993.3
"M"
997.3
994.3
993.3
"E"
994.0
994.0
July 6, 1911
W.S. 991.0
Ditch and Dike
997.5
"C"
5
6
"B"
997.6
"A"
999.0
999.6
2
1
11
12
7
8
14
13
18
Twelve Mile Creek
Ditch.
Five Mile Creek
River.
Mustinka
Cut-off Channel
"N"


"G"
999.9
"F"
999.1
"E"
999.0
July 6, 1911
W.S. 999.0
"C"
997.5
"B"
997.5
"A"
Ditch
Ditch and Dike
Twelve Mile Creek
Ditch.
Five Mile Creek
Mustinka River.
"N"
State Ditch.
6
5
4
7
8
9
18
17
16

It is further ordered that a competent stenographer shall be furnished by each party to the Commissioner who shall be under the direction and supervision of the Commissioner, and such stenographer shall furnish four copies of the testimony as soon as possible after the taking of each portion thereof, one for each of the parties and two for the Commissioner.

A true copy,

Test:

[SEAL.]

JAMES D. MAHER,
Clerk of the Supreme Court of the United States.

3553 April 30, 1917.

(Endorsed:) Supreme Court of the United States. October Term, 1916. Term No. 27, Original. The State of North Dakota, complainant, vs. The State of Minnesota. Order. Filed April 30, 1917.

(Here follows map marked page 3554.)

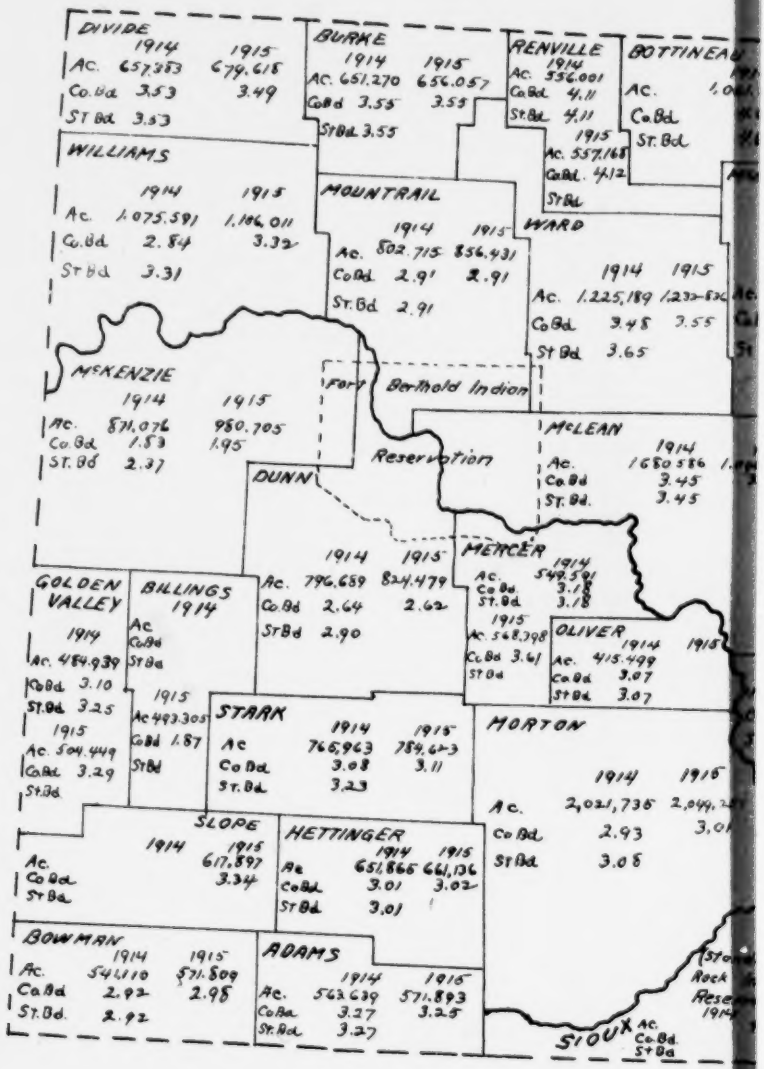
3555 COMPLAINANT'S EXHIBIT 35.

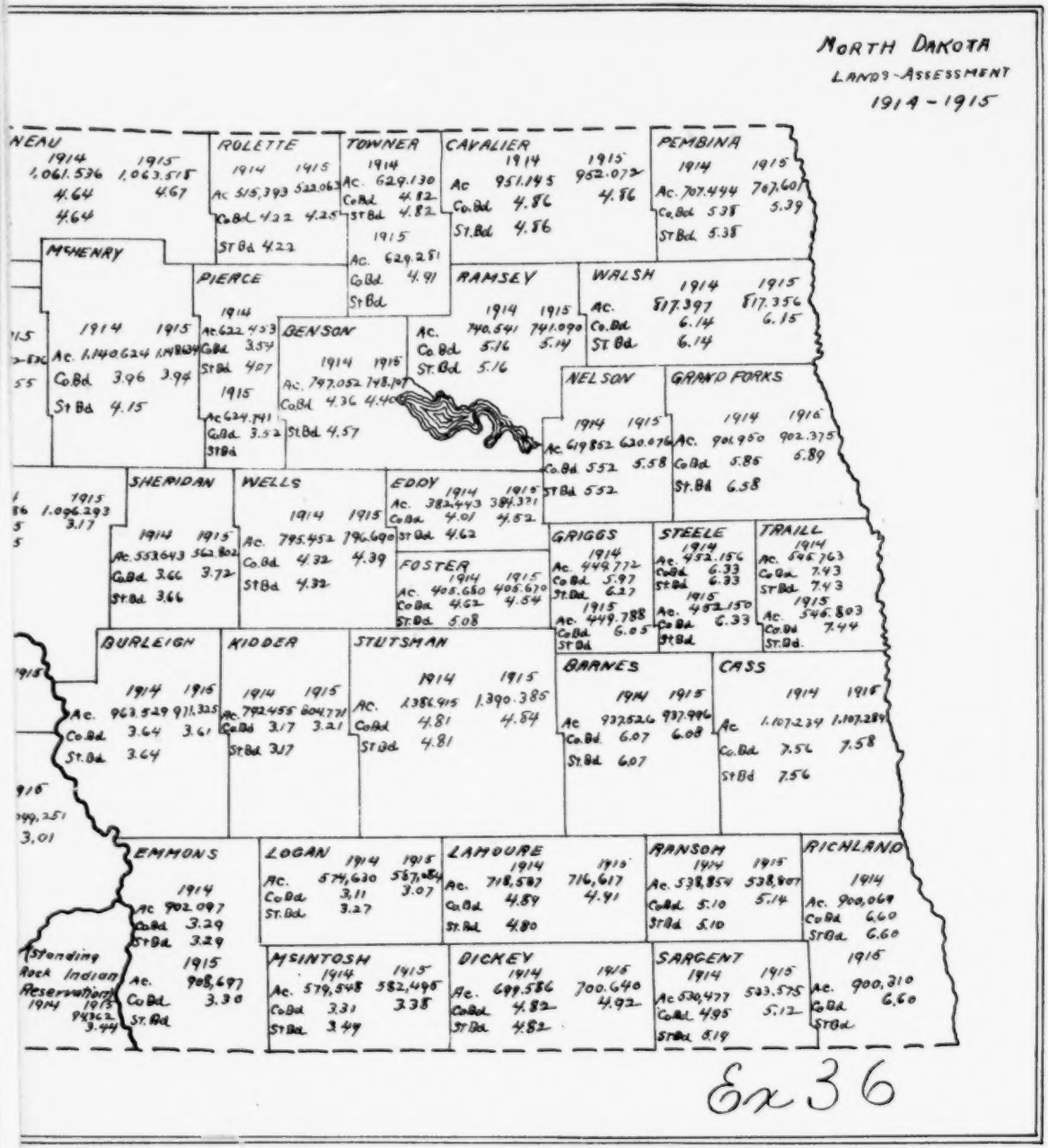
Description and Valuations of Certain Lands, Exclusive of Structures and Improvements, in Fairmount Township, Richland County, North Dakota, for the Years 1914-1915-1916 and 1917, on Which All Taxes were Extended for said Years, viz:

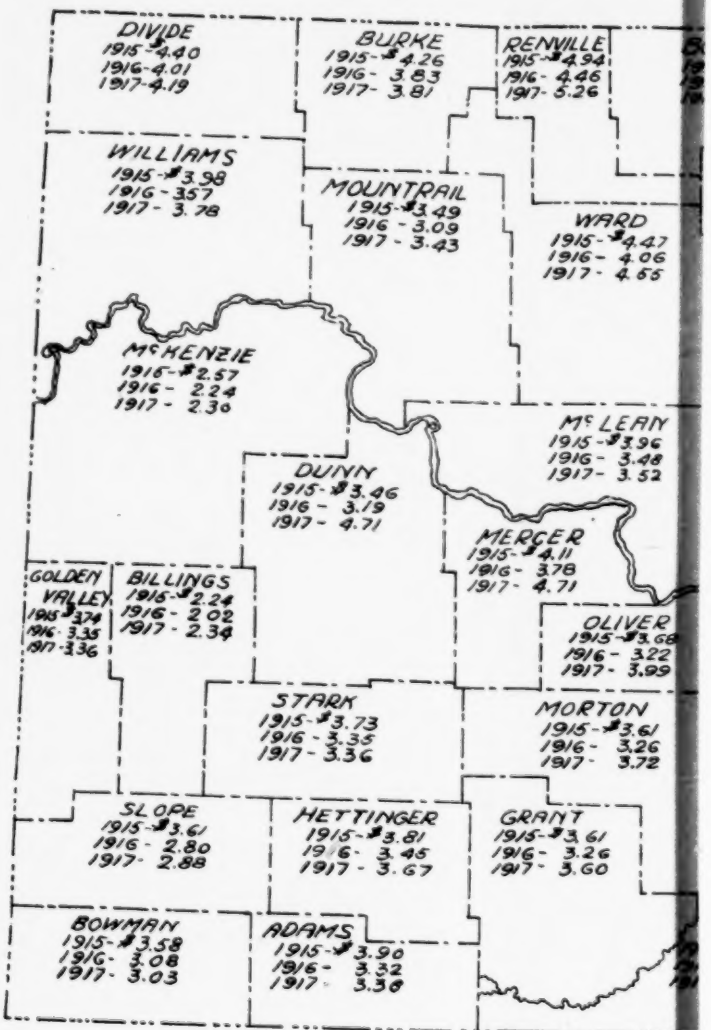
Description.	Valuations. 1914.	1915.	1916.	1917.
10–130–47, Lot 1	$132	230	81	174
15–130–47, w. ½ of ne. ¼ Lots 3-4	746	1,081	373	827
nw. ¼–w. ½ of se. ¼ lots 1-2 less r. o. w.	2,152	2,790	2,155	2,443
sw. ¼ less r. o. w.	1,023	1,461	1,239	1,117
21–130–47, SE. ¼ ex. r. o. w.	1,452	1,769	1,328	1,624
22–130–47, nw. ¼ of ne. ¼ of ne. ¼ of sw. ¼ lots 2-3 ex. r. o. w.	1,010	1,391	478	1,066
nw. ¼ ex. r. o. w.	1,267	1,501	518	1,146
Lot 4 ex. r. o. w.	46	86	32	65
w. ½ of sw. ¼ lot 1 ex. r. o. w.	779	1,098	381	841
27–130–47, nw. ¼ of nw. ¼–s. ½ of nw. ¼ lots 1-2	660	1,129	389	870
ne. ¼ of nw. ¼ or lot 3	85	150	57	116
28–130–47, ne. ¼	1,479	1,769	1,458	1,624
S. ½	2,508	3,475	2,851	2,973
33–130–47, nw. ¼ of ne. ¼ lots 1-2-3-4	924	1,516	510	1,131
sw. ¼	1,479	1,895	1,296	1,392
4–129–47, w. ½ of w. ½	1,247	1,737	1,215	1,138
Lots 3-4	343	513	219	471
E. ½ of w. ½ sw. ¼ of ne. ¼ W. ½ of se. ¼ lot 2	2,218	2,859	1,021	2,277
Lot 1	171	206	89	196
9–129–47, E. ½ of nw. ¼–w. ½ of ne. ¼	1,056	1,516	518	1,160
E. ½ of sw. ¼ w. ½ of se. ¼	1,056	1,516	518	1,160
W. ½ of w. ½	1,267	1,643	1,037	1,160
Lots 1-2-3-4	284	427	178	392
15–129–47, All	370	554	227	500

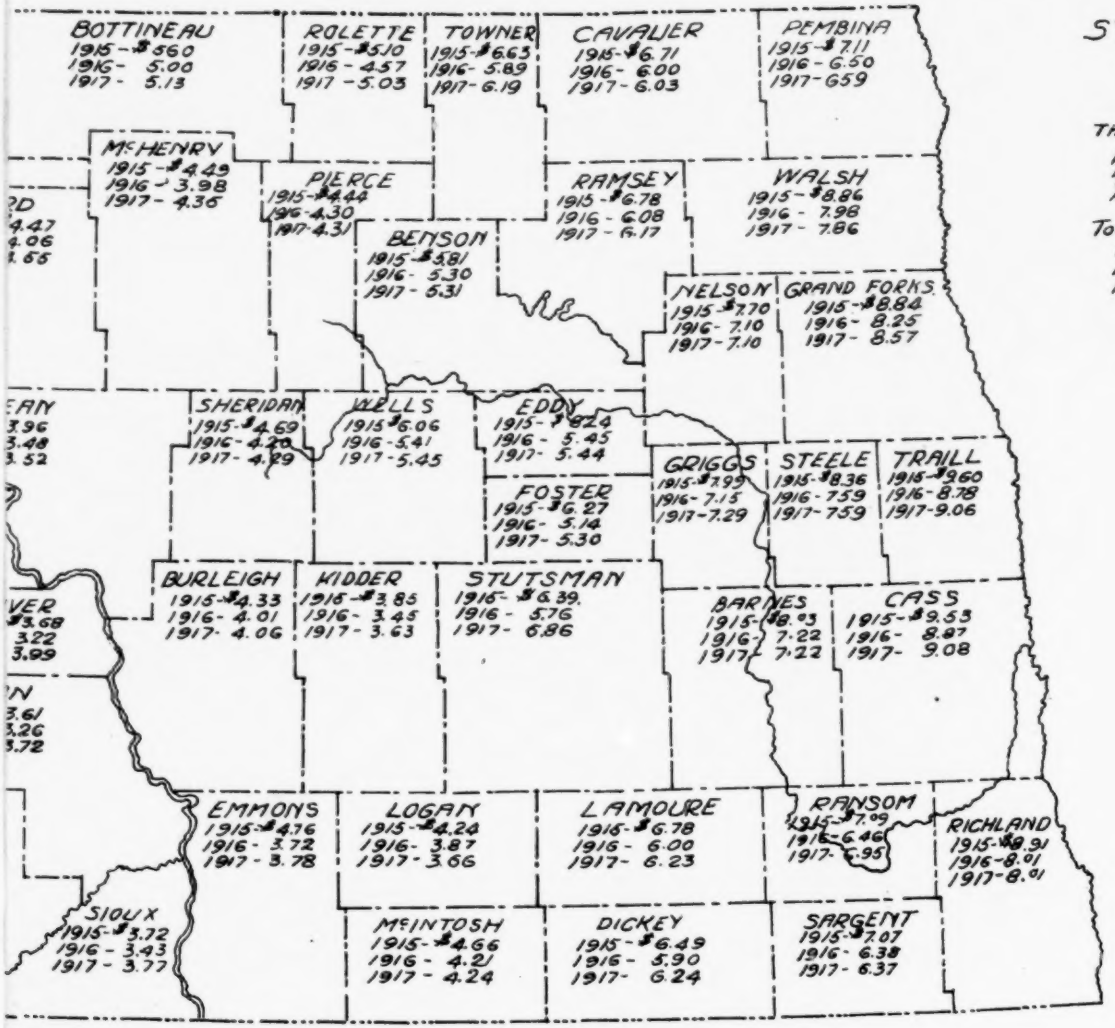
3556

16–129–47, Sw. ¼	1,267	1,643	518	1,392
Nw. ¼	1,267	1,643	518	1,392
Lot 1	172	253	105	232
Se. ¼ of Ne. ¼	211	316	130	290
W. ½ of Ne. ¼	462	632	259	580
Se. ¼	660	1,516	518	1,160
17–129–47, Se. ¼ less r. o. w.	1,214	1,698	518	1,566


DIVIDE
1914 1915
Ac. 657,383 679,618
Co. Bd. 3.53 3.49
ST Bd 3.53
BURKE
1914 1915
AC. 651,270 656,057
CoBd 3.55 3.53
StBd 3.55
RENVILLE
1914
Ac. 536,001
CoBd. 4.11
St. Bd 4.11
1915
Ac. 557,168
CoBd. 4.12
St Bd
BOTTINEAU
Ac.
Co. Bd.
St. Bd.
WILLIAMS
1914 1915
Ac. 1,075,591 1,106,011
Co. Bd. 2.84 3.32
St Bd 3.31
MOUNTRAIL
1914 1915
Ac. 802,715 856,431
CoBd. 2.91 2.91
St. Bd. 2.91
WARD
1914 1915
Ac. 1,225,189 1,232-832
Co Bd 3.48 3.55
St Bd 3.65
McKENZIE
1914 1915
Ac. 871,076 980,705
Co. Bd. 1.83 1.95
ST. Bd 2.37
Fort Berthold Indian Reservation
McLEAN
1914
Ac. 1680586
Co Bd 3.45
St. Bd. 3.45
DUNN
1914 1915
Ac. 796,689 824,479
Co. Bd 2.64 2.62
StBd 2.90
MERCER
1914
Ac 548,501
Co Bd 3.18
St Bd 3.18
1915
Ac 568,398
Co Bd 3.41
St Bd
OLIVER
1914 1915
Ac. 415,499
Co Bd 3.07
St Bd 3.07
GOLDEN VALLEY
1914
Ac. 484,939
CoBd 3.10
St. Bd 3.25
1915
Ac. 504,449
CoBd 3.29
St Bd
BILLINGS
1914
Ac
CoBd
St Bd
1915
Ac 493,305
CoBd 1.87
StBd
STARK
1914 1915
Ac 766,963 784,643
Co Bd 3.08 3.11
St. Bd 3.23
MORTON
1914 1915
Ac. 2,021,735 2,044,
Co Bd 2.93 3.0
St Bd 3.08
SLOPE
1914 1915
Ac. 617,897
Co Bd 3.34
St Bd
HETTINGER
1914 1915
Ac 651,866 661,136
CoBd. 3.01 3.02
St Bd 3.01
BOWMAN
1914 1915
Ac. 541,110 571,809
Co Bd 2.92 2.98
St. Bd. 2.92
ADAMS
1914 1915
Ac. 563,639 571,893
CoBa 3.27 3.25
St Bd 3.27
SIOUX
Ac.
Co Bd
St Ba


NORTH DAKOTA
LAND - ASSESSMENT
1914 - 1915
BOTTINEAU
1914 1915
1,061,536 1,063,515
4.64 4.67
4.64
ROLETTE
1914 1915
Ac 515,393 522,063
Co Bd 4.22 4.25
St Bd 4.22
TOWNER
1914
Ac. 629,130
Co Bd 4.82
St Bd 4.82
1915
Ac. 629,251
Co Bd 4.91
St Bd
CAVALIER
1914 1915
Ac 951,145 952,072
Co Bd 4.86 4.86
St Bd 4.86
PEMBINA
1914 1915
Ac. 707,444 767,601
Co Bd 5.38 5.39
St Bd 5.38
McHENRY
1914 1915
Ac. 1,140,624 1,148,134
Co Bd 3.96 3.98
St Bd 4.15
PIERCE
1914
Ac 622,433
Co Bd 3.54
St Bd 4.07
1915
Ac 624,741
Co Bd 3.52
St Bd 4.57
RAMSEY
1914 1915
Ac. 740,541 741,090
Co Bd 5.16 5.14
St Bd 5.16
WALSH
1914 1915
Ac. 817,397 817,356
Co Bd 6.14 6.15
St Bd 6.14
GENSON
1914 1915
Ac. 747,052 748,147
Co Bd 4.36 4.40
St Bd 4.57
NELSON
1914 1915
Ac 619,852 620,076
Co Bd 5.52 5.58
St Bd 5.52
GRAND FORKS
1914 1916
Ac. 901,950 902,375
Co Bd 5.85 6.89
St Bd 6.58
SHERIDAN
1914 1915
Ac. 553,643 562,802
Co Bd 3.66 3.72
St Bd 3.66
WELLS
1914 1915
Ac. 795,452 796,690
Co Bd 4.32 4.39
St Bd 4.32
EDDY
1914 1915
Ac. 382,443 389,321
Co Bd 4.01 4.52
St Bd 4.62
FOSTER
1914 1915
Ac. 405,650 406,670
Co Bd 4.62 4.54
St Bd 5.08
GRIGGS
1914
Ac. 449,772
Co Bd 5.97
St Bd 6.27
1915
Ac. 449,788
Co Bd 6.05
St Bd
STEELE
1914
Ac 452,156
Co Bd 6.33
St Bd 6.33
1915
Ac 452,150
Co Bd 6.33
St Bd
TRAILL
1914
Ac. 546,763
Co Bd 7.43
St Bd 7.43
1915
Ac. 546,803
Co Bd 7.44
St Bd.
BURLEIGH
1914 1915
Ac. 963,529 911,325
Co Bd 3.64 3.61
St Bd 3.64
KIDDER
1914 1915
Ac. 792,455 804,771
Co Bd 3.17 3.21
St Bd 3.17
STUTSMAN
1914 1915
Ac. 1,386,915 1,390,385
Co Bd 4.81 4.84
St Bd 4.81
BARNES
1914 1915
Ac 932,526 937,996
Co Bd 6.07 6.08
St Bd 6.07
CASS
1914 1916
Ac 1,107,234 1,107,284
Co Bd 7.56 7.58
St Bd 7.56
EMMONS
1914
Ac 902,097
Co Bd 3.29
St Bd 3.29
1915
Ac. 908,497
Co Bd 3.30
St Bd
Standing Rock Indian Reservation
1914 1915
94362 3.44
LOGAN
1914 1915
Ac. 574,630 587,584
Co Bd 3.11 3.07
St Bd 3.27
LAMOURE
1914 1915
Ac. 718,587 716,617
Co Bd 4.89 4.91
St Bd 4.80
RANSOM
1914 1915
Ac. 538,854 538,907
Co Bd 5.10 5.14
St Bd 5.10
RICHLAND
1914
Ac. 900,069
Co Bd 6.60
St Bd 6.60
1916
Ac. 900,210
Co Bd 6.60
St Bd
McINTOSH
1914 1915
Ac. 579,548 582,496
Co Bd 3.31 3.38
St Bd 3.49
DICKEY
1914 1915
Ac. 699,586 700,640
Co Bd 4.82 4.92
St Bd 4.82
SARGENT
1914 1915
Ac 530,477 533,575
Co Bd 4.95 5.12
St Bd 5.19
Ex 36


DIVIDE
1915 - $4.40
1916 - 4.01
1917 - 4.19
BURKE
1915 - $4.26
1916 - 3.83
1917 - 3.81
RENVILLE
1915 - $4.94
1916 - 4.46
1917 - 5.26
WILLIAMS
1915 - $3.98
1916 - 3.57
1917 - 3.78
MOUNTRAIL
1915 - $3.49
1916 - 3.09
1917 - 3.43
WARD
1915 - $4.47
1916 - 4.06
1917 - 4.65
McKENZIE
1915 - $2.57
1916 - 2.24
1917 - 2.30
McLEAN
1915 - $3.96
1916 - 3.48
1917 - 3.52
DUNN
1915 - $3.46
1916 - 3.19
1917 - 4.71
MERCER
1915 - $4.11
1916 - 3.78
1917 - 4.71
GOLDEN VALLEY
1915 - $3.74
1916 - 3.35
1917 - 3.36
BILLINGS
1915 - $2.24
1916 - 2.02
1917 - 2.34
OLIVER
1915 - $3.68
1916 - 3.22
1917 - 3.99
STARK
1915 - $3.73
1916 - 3.35
1917 - 3.36
MORTON
1915 - $3.61
1916 - 3.26
1917 - 3.72
SLOPE
1915 - $3.61
1916 - 2.80
1917 - 2.88
HETTINGER
1915 - $3.81
1916 - 3.45
1917 - 3.67
GRANT
1915 - $3.61
1916 - 3.26
1917 - 3.60
BOWMAN
1915 - $3.58
1916 - 3.08
1917 - 3.03
ADAMS
1915 - $3.90
1916 - 3.32
1917 - 3.38



STATE of NORTH DAKOTA

OFFICE OF THE STATE AUDITOR
BISMARCK

The Amounts shown indicate the Valuations per Acre of Lands as left by the State Board of Equalization for the Years 1915-1916-1917

Total Assessed Value of all Farm Lands.
1915 = 213,137,140.00
1916 = 193,470,548.00
1917 = 202,961,578.00

Carl R. Kositzky
STATE AUDITOR

Ex 37

Compl. Ex 37
GS.

Description.		Valuations.			
		1914.	1915.	1916.	1917.
20-129-47.	E. ½ of NW. ¼—ne. ¼ of sw. ¼	950	1,233	551	914
21-129-47.	NW. ¼ less r. o. w.	1,228	1,469	510	1,124
	NE. ¼	1,254	1,516	518	1,146
	SW. ¼ less r. o. w.	1,056	1,453	494	1,109
	SE. ¼	1,267	1,516	518	1,160
22-129-47.	W. ½ of w. ½ or lots 1-2-3-4	792	1,200	421	1,073
27-129-47.	W. ½ of SW. ¼	581	632	259	580
	SW. ¼ of nw. ¼ Lot 3	436	530	219	479
	Lot 4—NW. ¼ of NW. ¼	238	379	162	341
28-129-47.	NE. ¼ less r. o. w.	1,023	1,469	972	1,124
	E. ½ of sw. ¼ W. ½ of SE. ¼—E. ½ of W. ½ of sw. ¼ ex. r. o. w.	1,558	1,879	1,814	1,726
	NW. ¼ less r. o. w.	1,056	1,501	510	1,146
	E. ½ of SW. ¼ less r. o. w.	495	212	405	544
	W. ½ of W. ½ of SW. ¼	316	443	130	290
29-129-47.	E. ½ of NW. ¼—NE. ¼ of SW. ¼	950	1,327	551	1,044
	SE. ¼ of SW. ¼	317	443	130	348
32-129-47.	W. ½	2,534	3,032	1,620	2,784
	W. ½ of SE. ¼	528	759	324	696
33-129-47.	E. ½ of E. ½ ex. r. o. w.	1,036	1,619	1,053	1,138
34-129-47.	W. ½ of E. ½ or lots 1-2-3-4	462	869	405	667
	SW. ¼ W. ½ of NW. ¼ less r. o. w.	1,492	2,053	745	1,660

3557 STATE OF NORTH DAKOTA,
County of Richland, ss:

I, F. A. Burton, Auditor of Richland County, North Dakota, do hereby certify that the foregoing descriptions and valuations are true and correct as same are shown by the Asse-ment books of Fairmount Township, Richland County, North Dakota, for the years 1914-1915-1916 and 1917.

Dated at Wahpeton, N. Dak., this 15th day of November, 1917.

[SEAL.]

F. A. BURTON,
County Auditor, Richland County, North Dakota.

(Here follow maps marked pages 3558 and 3559.)

3560 COMPLAINANT'S EXHIBIT No. 38.

Certified Copy of Commissioner's Proceedings Referring to Flooded Lands in Fairmount Township, Richland County, N. D.

Communication signed by members of the Board of Supervisors of Fairmount Township, stating that the said Board had received many applications for rebate of 1915 Taxes on flooded lands in said Township: that the said Board had made an examination and that the attached list showed the description of the several tracts of land damaged by flood and the number of acres of each tract on which the crop loss was total; and that the said Board recommended a rebate of 50 per cent of the 1915 taxes on the acreage shown on said list.

On motion the following resolution was adopted:

Whereas, the amount of damage by flood in Fairmount Township this year has been so extensive that a rebate of the 1915 taxes on all of the flooded lands would largely affect the tax receipts of the said Township for said year, and

Whereas, the owners of said flooded lands may derive the same benefit, without any loss of tax revenues if their lands be assessed at a lower valuation for the year 1916, therefore

Resolved, that we recommend, in lieu of abatements on 1915 taxes that the Board of Supervisors of Fairmount Township return a true and just valuation of the lands in said Township for the year 1916.

STATE OF NORTH DAKOTA,
County of Richland, ss:

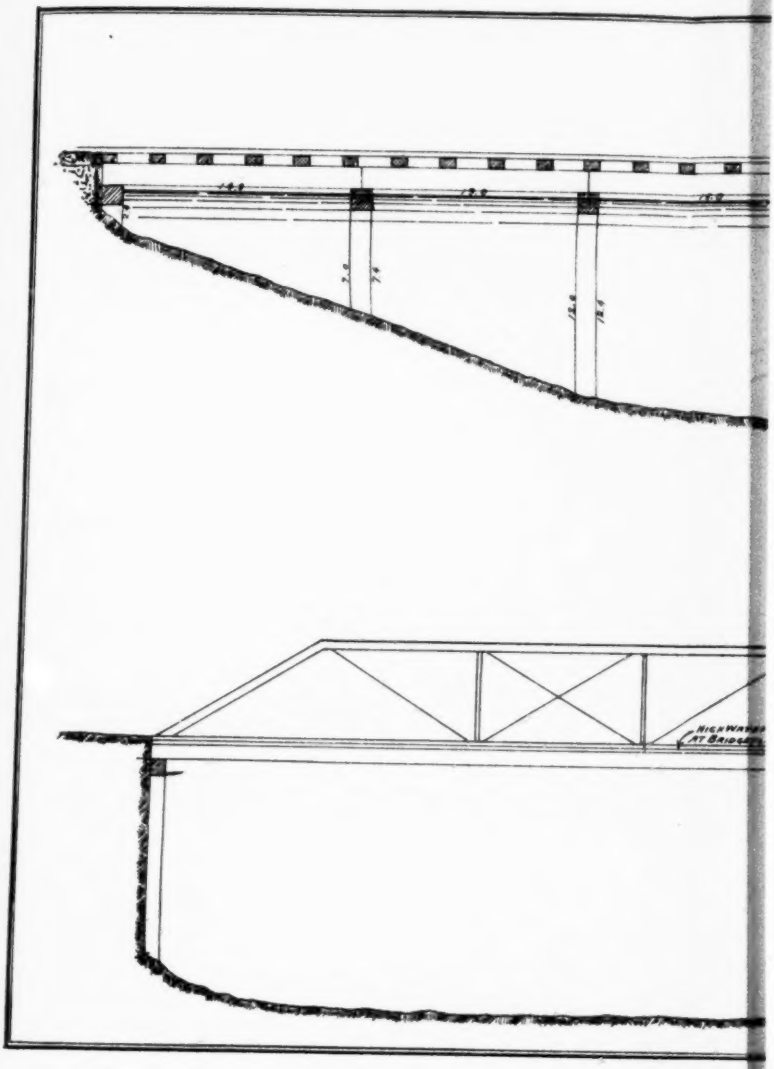
3561 I, F. A. Burton, Auditor of Richland County, North Dakota, do hereby certify that the foregoing is a true and correct copy of a part of the proceedings of the Board of County Commissioners of Richland County, North Dakota, on the 17th day of November 1915, as shown by Commissioners' Record "G." for said County on page 3.

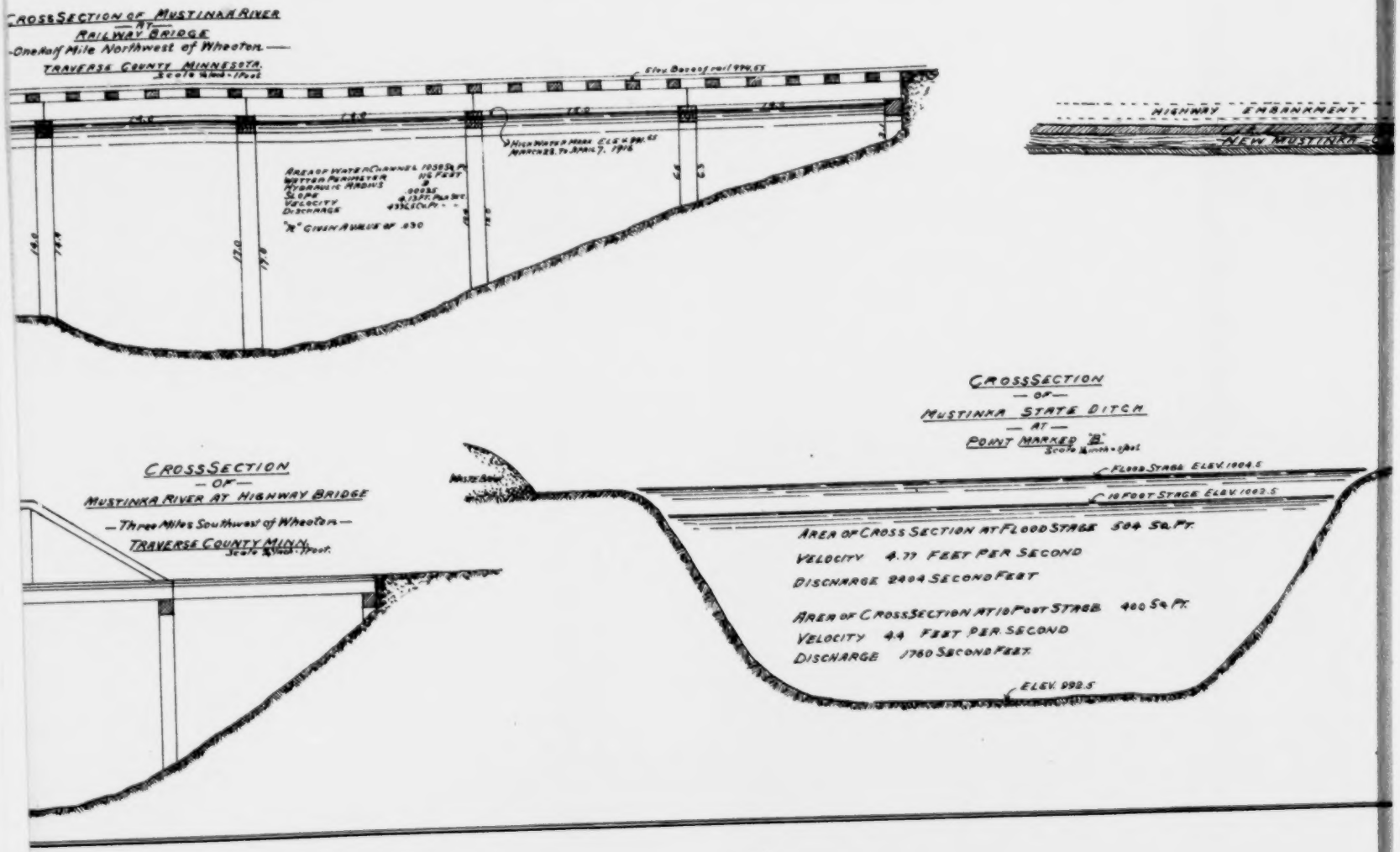
Dated at Wahpeton, N. D., this 15th day of November, 1917.

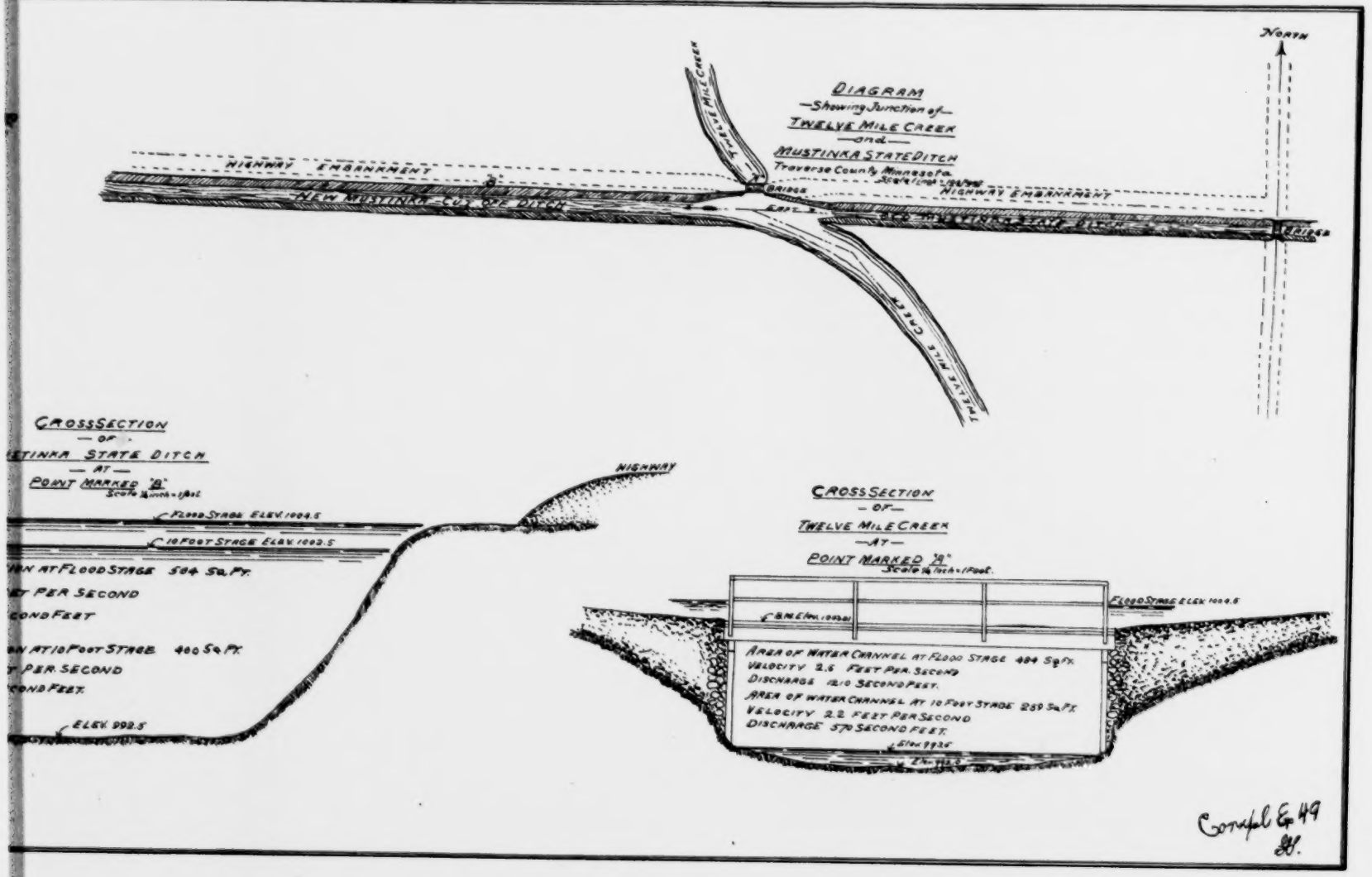
(Signed) F. A. BURTON,
County Auditor of Richland County, North Dakota.

[SEAL.]

(Here follows map marked page 3562.)




CROSS SECTION OF MUSTINKA RIVER
AT
RAILWAY BRIDGE
One Half Mile Northwest of Wheaton
TRAVERSE COUNTY MINNESOTA.
Elev. Base of rail 996.65
HIGHWAY EMBANKMENT
NEW MUSTINKA
AREA OF WATER IN CHANNEL 1038 SQ. FT.
WETTED PERIMETER 115 FEET
HYDRAULIC RADIUS 9
SLOPE .00235
VELOCITY 4.13 FT. PER SEC.
DISCHARGE 4335 SEC. FT.
"n" GIVEN A VALUE OF .030
CROSS SECTION
OF
MUSTINKA STATE DITCH
AT
POINT MARKED "B"
Scale 1 inch = 5 feet
FLOOD STAGE ELEV. 1004.5
10 FOOT STAGE ELEV. 1002.5
AREA OF CROSS SECTION AT FLOOD STAGE 504 SQ. FT.
VELOCITY 4.77 FEET PER SECOND
DISCHARGE 2404 SECOND FEET
AREA OF CROSS SECTION AT 10 FOOT STAGE 400 SQ. FT.
VELOCITY 4.4 FEET PER SECOND
DISCHARGE 1760 SECOND FEET
ELEV. 992.5
CROSS SECTION
OF
MUSTINKA RIVER AT HIGHWAY BRIDGE
Three Miles Southwest of Wheaton
TRAVERSE COUNTY MINN.



Compl Eg 49
JH.

3563 DEFENDANT'S EXHIBIT 1.

STATE OF MINNESOTA,
County of Traverse:

District Court, Sixteenth Judicial District.

STATE OF MINNESOTA ex Rel. ALFRED ANDERSON, Relator,

vs.

ADOLPH O. EBERHART, S. G. IVERSON and JULIUS A. SCHMAHL, as the State Drainage Commission, Respondents.

STATE OF MINNESOTA,
County of Traverse, ss:

I, Ludwig Wiberg, Clerk of the District Court of the County of Traverse in the Sixteenth Judicial District of the State of Minnesota, do hereby certify that I have carefully compared the hereto annexed copy of petition for writ of mandamus, descision, findings and order for judgment by the court and the judgment in the above entitled action, with the original of each thereof on file and of record in my office and in my custody as such Clerk; that each of the same is a true, full and correct copy of its original and that together the same constitute and are a full, true and correct transcript and exemplification of the judgment roll in said action and proceeding and of the whole thereof.

In testimony whereof, I have hereunto set my hand and affixed the seal of said District Court at the City of Wheaton in said County and Judicial District, this 11th day of July, 1917.

3564 [SEAL.] LUDWIG WIBERG,
Clerk of the District Court, Traverse County, Minnesota, in the Sixteenth Judicial District, State of Minnesota.

STATE OF MINNESOTA,
County of Traverse, ss:

I, S. A. Flaherty, Judge of the District Court of the Sixteenth Judicial District, of the State of Minnesota, which includes the County of Traverse in said State, and I being the presiding Judge in and of said Court do hereby certify that Ludwig Wieberg, Esquire, whose signature appears to the above certificate of attestation, is Clerk of said District Court in and for the County of Traverse in the Sixteenth Judicial District of the State of Minnesota; that his said

signature thereto is genuine, that full faith and credit are due to all his official acts and that said attestation is in due form.

Dated at Wheaton, Minnesota, this 13th day of July, 1917.

S. A. FLAHERTY,
Judge of the District Court of the Sixteenth Judicial District of Minnesota.

3565 STATE OF MINNESOTA,
County of Traverse, ss:

I, Ludwig Wiberg, Clerk of the District Court in the Sixteenth Judicial District of the State of Minnesota, do hereby certify that the Honorable S. A. Flaherty is, and was, at the date of the foregoing certificate, the presiding Judge of the District Court of the Sixteenth Judicial District of the State of Minnesota, which includes the County of Traverse in said State; that the signature of said Judge to said certificate is true and genuine.

In testimony whereof, I have hereunto set my hand and the seal of said District Court, at the City of Wheaton in the County of Traverse, in said Judicial District, this 17th day of July, 1917.

[SEAL.] LUDWIG WIBERG,
Clerk of the District Court, Traverse County, Minnesota, in the Sixteenth Judicial District, State of Minnesota.

3566 STATE OF MINNESOTA,
County of Traverse.

District Court, Sixteenth Judicial District.

STATE OF MINNESOTA *ex Rel.* ALFRED ANDERSON, Relator,

vs.

ADOLPH O. EBERHART, S. G. IVERSON and JULIUS A. SCHMAHL, as the State Drainage Commission, Respondents.

To the Honorable District Court in and for the County of Traverse:

Your petitioner Alfred Anderson, respectfully states to the Court:

That said respondents Adolph O. Eberhart, S. G. Iverson, and Julius A. Schmahl are respectively the Governor, Auditor and Secretary of the State of Minnesota and constitute the State Drainage Commission for said State.

That the Relator is a resident of Traverse County, Minnesota, and has resided thereat continuously for twenty-nine years last past and since the spring of 1896 has owned and occupied, and now owns and occupies, that certain real estate situate in said Traverse County described as follows:

"The northwest quarter section thirty-four, township one hundred twenty-eight, range forty-six, and the north half of the south-
3567 east quarter of Section thirty-three in said township and range.

That the two above described tracts comprise substantially two hundred and forty acres which were, prior to the overflow thereof hereinafter stated, fertile, cultivable and productive farming land. That said land together with about seven thousand seven hundred sixty acres of good farming land owned by persons other than relator, is situated along the banks of and adjacent to the Mustinka River hereinafter mentioned and below the point therein constituting the outlet of the Mustinka Ditch hereinafter referred to, and prior to the year 1897 for about thirty years said lands had been under cultivation and had never been overflowed. That in the crop season of the years from and including 1897 to 1908, said lands, including about one hundred and fifty acres of the said land of Relator, were overflowed by the overflow of the Mustinka River thereby destroying crops on said lands to the value of about $28,300, including therein the destruction of Relator's crops amounting to $2,987 and thereby depreciating the value of the said lands to an amount equal to the difference between Forty and Fifteen Dollars per acre. That the said overflows of the said River and consequently of the said lands were caused by and resulted from the construction of the Mustinka State Ditch which was constructed by the State of Minnesota during and prior to the year 1896 to drain lands situate in and then owned by said State so as to make the said lands fit for farming and so fertile, valuable and salable. That at the time of its construction said Ditch and the land on which the same is located were, and still are, owned by said State and said Ditch was constructed without the consent of either Relator or of any of the owners of said lands
3568 along said River and that no notice was ever served upon Relator or any of said owners of the intention of the State to construct the same, and they were in no manner consulted or given opportunity to be heard in the matter of its construction. That in the construction of said Ditch the said state diverted large volumes of water into said Mustinka River that otherwise and prior to the construction by reason of the elevation and watershed naturally flowed northerly into Wilkin County in said State. That the waters of said Mustinka State Ditch flow into the said Mustinka River whose channel is and has been inadequate to take care thereof. That such overflows of said *of said* river have occurred each year since the construction of said Ditch at times of rain and will so continue each year to the great and irreparable damage of Relator and said other lands unless an adequate outlet for the surface waters brought to said river as a result of the construction of said Ditch is constructed as provided by Chapter 138 of the General Laws of Minnesota for 1911. That the outlet proposed to be constructed under and by said law is not for the purpose of drainging, and will not drain any lands, and there are no lands needing drainage, along the routes proposed in said Act.

That the waters overflowing said lands in vicinity of said River

collect and will continue to collect in pools at various low places therein and become stagnant and also flow into and collect in barns, barnyards, wells and cellars of residences on said lands creating a condition detrimental to the health of Relator and his family and of the people residing on and in the vicinity of said lands so overflowed and constituting, and which will constitute, a menace to the public health and a public nuisance, in addition to being a private nuisance and injury to relator and the owners of said lands
3569 overflowed thereby or residing in the vicinity of said overflowed lands on and near which there are many residents.

That it is and at all times since the enactment of the law herein referred to has been feasible for Respondents to construct an adequate outlet for the waters of said Ditch and the surplus waters of said river produced thereby so as to abate said nuisance and prevent further injury to said lands and the health of the residents thereon and the inhabitants in the vicinity thereof and to promote the public health, for the sum appropriated and as prescribed in said Chapter 138 of the General Laws of the State of Minnesota for 1911, which is hereby made a part of this petition the same as if set out herein in full.

That said relator has requested the Respondents to construct the said outlet to said State Ditch as authorized and directed by said Act and perform the duties imposed upon them as therein prescribed but they have refused and neglected and still refuse and neglect so to do and to undertake the performance of any thereof.

That Relator has no adequate remedy at law.

Wherefore, Your petitioner who has made no other application therefore prays that an alternative writ of mandamus do issue out of said court to the said Respondents commanding the said Respondents, viz: the said Adolph O. Eberhart, S. G. Iverson and Julius A. Schmahl as the State Drainage Commission to construct forthwith, the outlet to said Mustinka State Ditch as prescribed by section 1 of Chapter 138 of the General Laws of Minnesota for 1911.

ALFRED ANDERSON,
Petitioner.

3570 EDWARD RUSTAD,
Wheaton, Minn.,
THOMAS KNEELAND,
554 *Security Bank Building,*
Minneapolis, Minnesota,
Attorneys for Petitioner.

STATE OF MINNESOTA,
County of Traverse:

Alfred Anderson, being first duly sworn on oath says That he is the petitioner in the foregoing petition; that he has read said petition and knows the contents thereof and that the same is true of his

own knowledge except as to those matters therein stated on information and belief and that as to such matters he believes it to be true.

ALFRED ANDERSON.

Subscribed and sworn to before me this 16th day of September, 1911.

EDWARD RUSTAD,
Notary Public, Minnesota.

[NOTARIAL SEAL.]

My commission expires May 25, 1914.

3571 STATE OF MINNESOTA,
County of Traverse:

District Court, Sixteenth Judicial District.

STATE OF MINNESOTA ex Rel. ALFRED ANDERSON, Relator,

vs.

ADOLPH O. EBERHART, S. G. IVERSON, and JULIUS A. SCHMAHL, as the State Drainage Commission, Respondents.

Said cause came regularly before said court for trial, without a jury, at the court house in the village of Wheaton, in said county and state, on the 18th day of January, 1912, Messrs. Edward Rustad, Thomas Kneeland and F. W. Murphy appearing as counsel for Relator and Messrs. Alexander Janes and Alonzo Edgerton, Assistants Attorney General of said State appearing for Respondents and from the pleadings in said cause and the evidence adduced upon the trial court finds as facts:

That Adolph O. Eberhart, S. G. Iverson and Julius A. Schmahl, did at the time of the commencement of said cause, and now do, constitute the State Drainage Commission of said State of Minnesota.

That said Relator, Alfred Anderson, has been for twenty-nine years last past a resident of Traverse County, State of Min-
3572 sota, and with his family has resided upon and owned, since the spring of 1896, and now occupies and owns that certain real estate situate in said Traverse County described as follows:

"The northwest quarter of section thirty-four, in Township one hundred and twenty-eight, *or* range forty-six, and the north half of the southeast quarter of section thirty-three in said township and range comprising substantially two hundred and forty acres of farming land situate along and near the banks of and adjacent to the Mustinka River hereinafter mentioned and below the outlet of the Mustinka State Ditch hereinafter described."

"That said lands owned by the plaintiff were and are a part of the eight thousand acres of farming lands in said County situate asjacent to said Mustinka River referred to in Chapter 138 of the General laws of Minnesota for 1911, which said lands in the crop season

of the years 1897 to 1908 were overflowed by the overflows of said Mustinka River but previously for about thirty years had been under cultivation and never overflowed, and said Relator was one of the petitioners referred to in said Act. That such overflows of the said lands during said years from 1897 to 1908 destroyed crops on said lands to the value of $28,302 and depreciated the value of said lands overflowed in the sum of $25 per acre.

That the source of said Mustinka River was and is in Ottertail County, Minnesota, and said river flowed and flows in a southerly and southwesterly direction through and adjacent to said lands, including those of Relator aforesaid, and empties into Traverse Lake in said county. That in the year of 1857 under an Act of Congress the said State of Minnesota acquired from the government
3573 of the United States title to and became the owner of section 16 in township 128 of range 14 in Grant County, Minnesota, and sections 16 and 36 in Township 128 of range 45 in Traverse County, Minnesota, and that said state owned the south half of the southwest quarter and the north half of the southeast quarter, containing one hundred and sixty acres, in said last described section sixteen until April 9, 1900, and sold the residue of said specifically described sections 16, and 36 at various times prior to October 11, 1901.

That prior to the construction of the Mustinka State Ditch hereinafter mentioned the said State of Minnesota acquired title to and became owner, under deeds of conveyance to it from the owners thereof for the purpose of constructing a state ditch thereon, of a strip of land one hundred feet wide extending from the west to east between sections 18 and 19; 17 and 20 and sections 16 and 21 in township 128, Range 45 in said Traverse county and approximately through the center of sections twenty-three and twenty-four in said township and range; and thereupon, between the years 1894 and 1896 inclusive said State of Minnesota constructed a state ditch known ans the Mustinka State Ditch upon and through said strip of land with its eastern terminus beginning in the southwest quarter of the northwest quarter of section twenty in township one hundred twenty-eight of range forty-four, Grant County, Minnesota, thence running south-westerly to the southwest corner of said southwest quarter; thence westerly approximately through the center of section 19 in said township and range; thence westerly through approximately the center of sections 24 and 23 of township 128, range
3574 45, in Traverse County, Minnesota, to the northwest corner of said section twenty-three; thence northwesterly thru section twenty-two of said last named township and range to the southeast corner of section 16 of township 128, range 45, in said Traverse County, thence westerly between sections 16 and 21; 17 and 20; and 18 and 19 in said last mentioned township and range and into, and having for *for* its western terminus an outlet at the stream known *known* as the Twelve Mile Creek running northerly through said sections 19 and 18 and thence northerly and northwesterly to and emptying into the said Mustinka River in said last named

township and range, at a point above the lands hereinbefore referred to.

That said State of Minnesota constructed said ditch in order to drain lands then owned by said state so as to make the said lands fertile, valuable and salable and for no other purpose, and ever since its construction has owned and still owns said ditch, and the same was constructed without the consent or either Relator or any of the owners of said lands along said River below the outlet of said ditch and without notice to them and they were in no manner consulted or heard in the matter of its construction.

That the waters of said Mustinka State Ditch, since its construction, have flowed and still flow into the said Twelve Mile Creek and thence into the said Mustinka River and that the overflows aforesaid of said river upon the said lands, including that of Relator, were occasioned by and resulted from the construction of said ditch by said State. That such overflows of said Ditch and said Mustinka River have occurred each year since the construction of said ditch
3575 up to and including the year 1908 at times of rain or melting snow and will continue each year unless an adequate outlet for surplus waters, brought to said river as the result of the construction of said ditch, is constructed; and that the waters which overflow said lands below the outlet of said ditch including the lands of Relator, has collected and collect in pools at various low places and become stagnant and a condition is thus created which has been and is detrimental to the health of the people residing on and in the vicinity of the lands so overflowed, including Relator, and constituting and constitutes a menace to the public health and a public nuisance.

That it is and has been since the enactment of said Chapter 138 of the General Laws of Minnesota for 1911, feasible to construct an adequate outlet for the waters of said Mustinka State Ditch so as to abate said nuisance and injury and so as to prevent injury to the health of the inhabitants in the vicinity of said ditch and said river and to promote the public health at a cost of about $35,000.

That prior to the commencement of this action and proceeding and since the enactment of said law the said Relator requested the said Respondents to construct the said outlet to said State ditch as authorized and directed by said Act and to perform the duties imposed upon them as therein prescribed, but the said Respondents have refused and neglected and still refuse and neglect so to do and to undertake the performance of any thereof.

That the said Relator has no adequate remedy at law.

Except as hereinabove specifically found none of the allegations in the answer herein are true.

3576 *Conclusions of Law.*

The Court finds: That the Relator is entitled to the relief demanded in his petition and writ herein and to a writ of mandamus issued out of said Court to the said Respondents commanding said Respondents, Adolph O. Eberhart, S. G. Iverson and Julius A. Schmahl, as

the State Drainage Commission, to construct forthwith the outlet to said Mustinka State Ditch as prescribed by section 1 of Chapter 138 of the General Laws of Minnesota for the year 1911.

And it is further ordered that such Writ of Mandamus be issued out of this court by the Clerk thereof.

Let judgment be entered accordingly.

By the Court.

S. A. FLAHERTY,
Judge.

Dated February 1st, 1912.

3577 STATE OF MINNESOTA,
County of Traverse:

District Court, Sixteenth Judicial District.

STATE OF MINNESOTA ex Rel. ALFRED ANDERSON, Relator,

vs.

ADOLPH O. EBERHART, S. G. IVERSON and JULIUS A. SCHMAHL, as the State Drainage Commission, Respondents.

Judgment.

June 1st, 1912.

The above entitled action having been regularly placed upon the calendar of the above named court for the January A. D. 1912, General Term, thereof, upon the petition of the Relator, and the return and answer of the Respondents thereto came on for trial before the court without a jury, which was waived, and was tried on the 18th day of January, A. D. 1912, and the court, after hearing the evidence adduced at the said trial and being fully advised in the premises, and having determined as conclusions of law that the said Relator is entitled to a peremptory Writ of Mandamus as prayed in the petition, did on the thirteenth day of February, A. D. 1912, duly make and file its findings and order for judgment herein.

3578 Now, pursuant to said order and on motion of Edward Rustad, Esq. and Thomas Kneeland, Esq., attorneys for Relator, It is hereby Adjudged:

That said Relator Alfred Anderson, since the spring of 1896 owned, with his family resided upon, and now occupies and owns that certain real estate situated in Traverse County, State of Minnesota, and described as follows:

"The northwest quarter of section thirty-four in township one hundred twenty-eight, of range forty-six, and the north half of the southeast quarter of section thirty-three in said township and range comprising substantially two hundred and forty acres of farming land situated along and near the banks of and adjacent to the Mus-

tinka river hereinafter mentioned and below the outlet of the Mustinka State Ditch hereinafter described."

That said lands owned by Relator were and are a part of the eight thousand acres of farming lands in said county, situated adjacent to said Mustinka River referred to in Chapter one hundred thirty-eight of the General Laws of Minnesota for 1911, which said lands in the crop seasons of the years 1897 and 1908 were overflowed by the overflows of said Mustinka River and said Relator was one of the petitioners referred to in said Act.

That between and including the years 1894 and 1896, said State of Minnesota constructed a state ditch known as the Mustinka
3579 State Ditch upon and through a strip of land one hundred feet wide, owned by said State, with its eastern terminus beginning in the southwest quarter of the northwest quarter of section twenty in township one hundred twenty-eight of range forty-four, Grant County, Minnesota, and having for its western terminus an outlet at the stream known as the Twelve Mile Creek running northerly through sections nineteen and eighteen in Township one hundred and twenty-eight, of range forty-five, Traverse County, Minnesota, and thence northerly and northwesterly to and emptying into the said Mustinka River in said last named Township and range, at a point above the lands hereinbefore referred to.

That said State of Minnesota constructed said ditch in order to drain lands in the vicinity thereof then owned by said State, and ever since its construction has owned and still owns said ditch.

That the waters of the said Mustinka Ditch, since its construction have flowed and still flow into the said Twelve Mile Creek and thence into the said Mustinka River and the overflows aforesaid of said river upon the said lands including those of Relator were occasioned by and resulted from the construction of said ditch by said state.

That such overflows of said state ditch and said Mustinka River have occurred each year since the construction of said ditch up to and including the year 1908, and will so continue unless an adequate outlet is constructed for the surplus waters brought to said river as the result of the construction of said ditch; and that the waters which overflow said lands below the outlet of said ditch, including the lands of Relator, have collected and collect in pools at various low places and become stagnant and a condition is thus created which has been and is detrimental to the health of
80 the people residing on and in the vicinity of the lands so overflowed, including Relator, and have constituted and constitute a menace to the public health and a public nuisance.

And it is further ordered and adjudged that the Relator, Alfred Anderson, have a peremptory Writ of Mandamus, and that the same issue forthwith, directed to and commanding the said Respondents, Adolph O. Eberhart, S. G. Iverson and Julius A. Schmahl, As State Drainage Commission and each of them, upon the pain and peril that shall fall thereon for refusal, that they and each of them, forthwith construct an outlet of the said Mustinka State Ditch in Traverse County, Minnesota, of a capacity adequate to receive

and carry off all the waters thereof in order to abate the public nuisance created by the overflow of waters from said Mustinka State Ditch and prevent injury to the health of the Relator and his family and of the inhabitants in the vicinity of said Ditch and said Mustinka River in said County and the lands overflowed by the waters thereof, and to promote public health as prescribed, and for the purpose and so as to accomplish the object and result designated and required by Section 1, of Chapter One Hundred and thirty-eight of the General Laws of Minnesota for 1911.

By the Court,

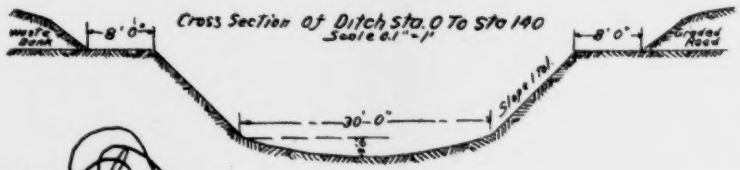
LUDWIG WIBERG,
Clerk of District Court.

$5.35.

(Here follow maps marked pages 3581, 3582, and 3583.)

MAP OF
MUSTINKA RIVER DITCH
TRAVERSE COUNTY, MINN.

Scale 2000'-1"



State Drainage Commission

Adolph O. Eberhart Governor

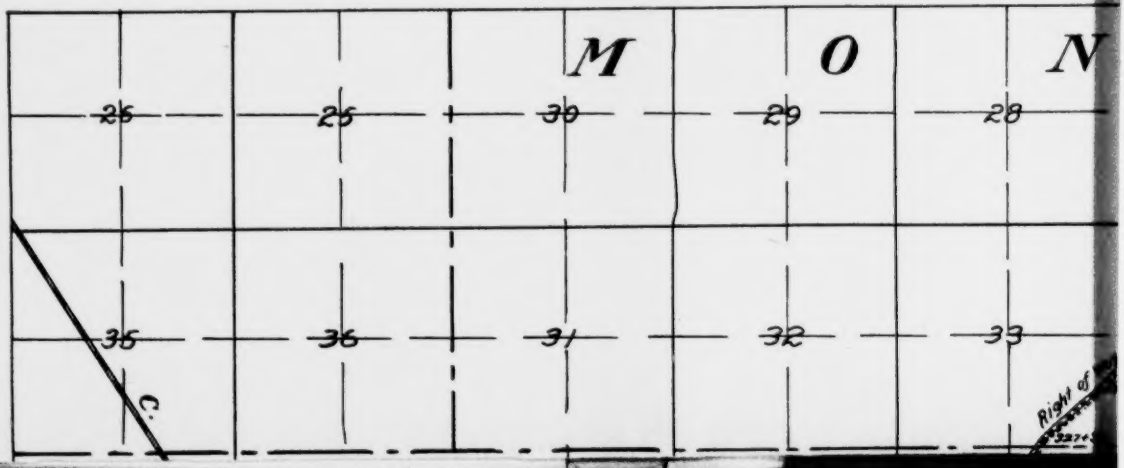
Samuel G. Iverson State Auditor

Julius A. Schmahl Secretary Of State

I do hereby certify that this is a true copy of the original map of the Mustinka River State Ditch on file in my office.

Samuel G. Iverson

Secretary Of State Drainage Commission



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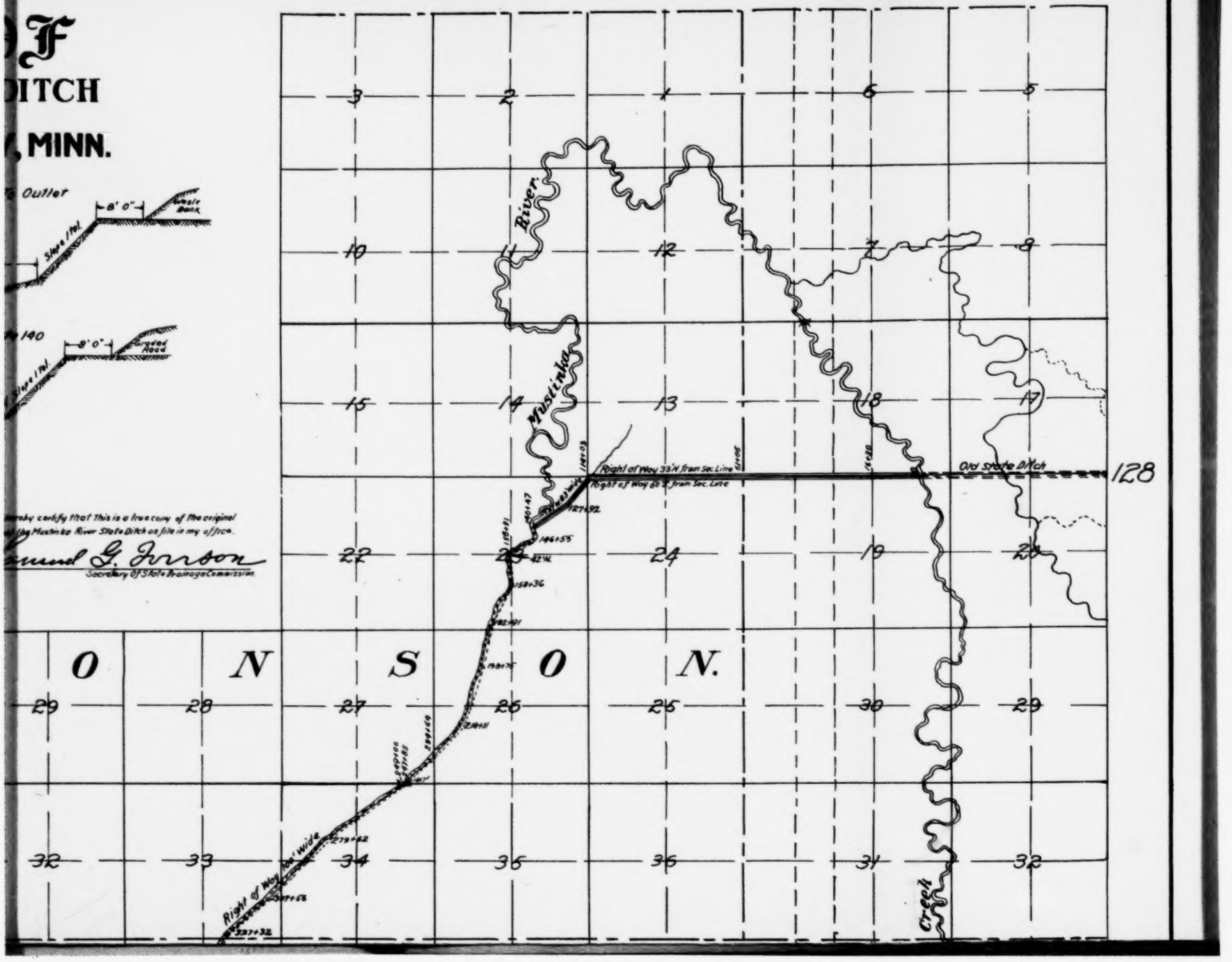
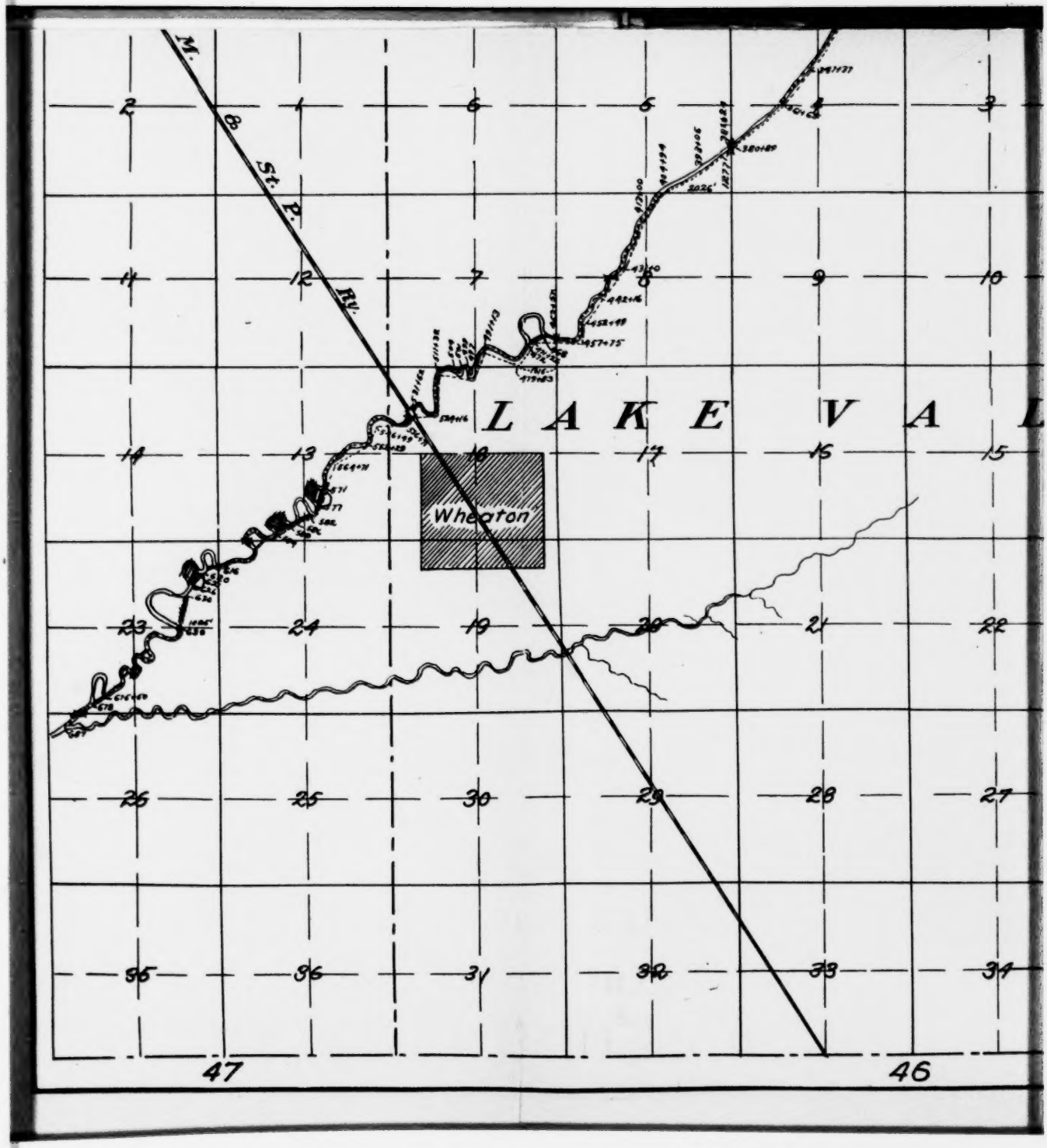
hereby certify that This is a true copy of the original filed by Mustinka River State Ditch on file in my office.

Edmund G. Irrgang
Secretary of State Drainage Commission.

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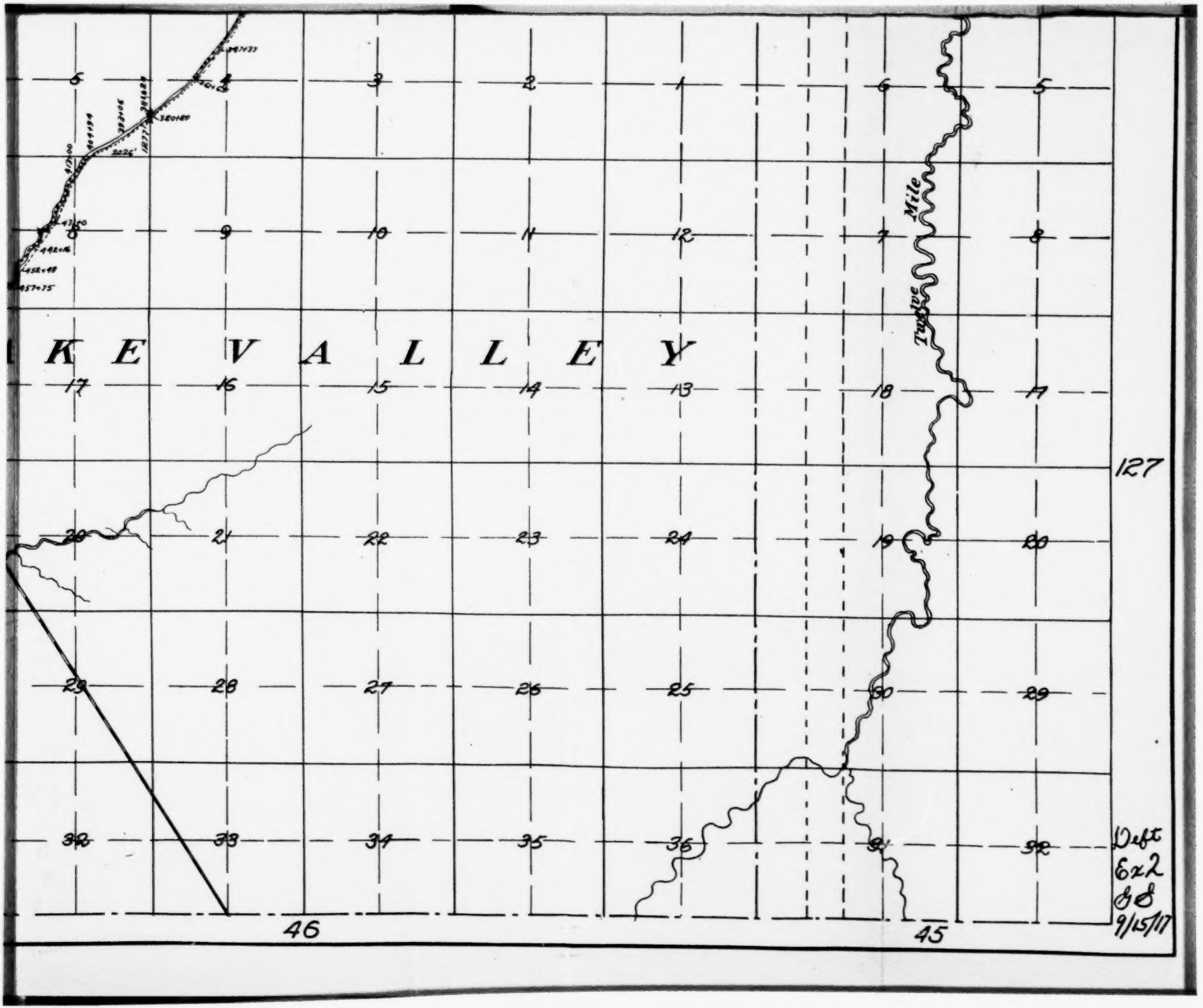
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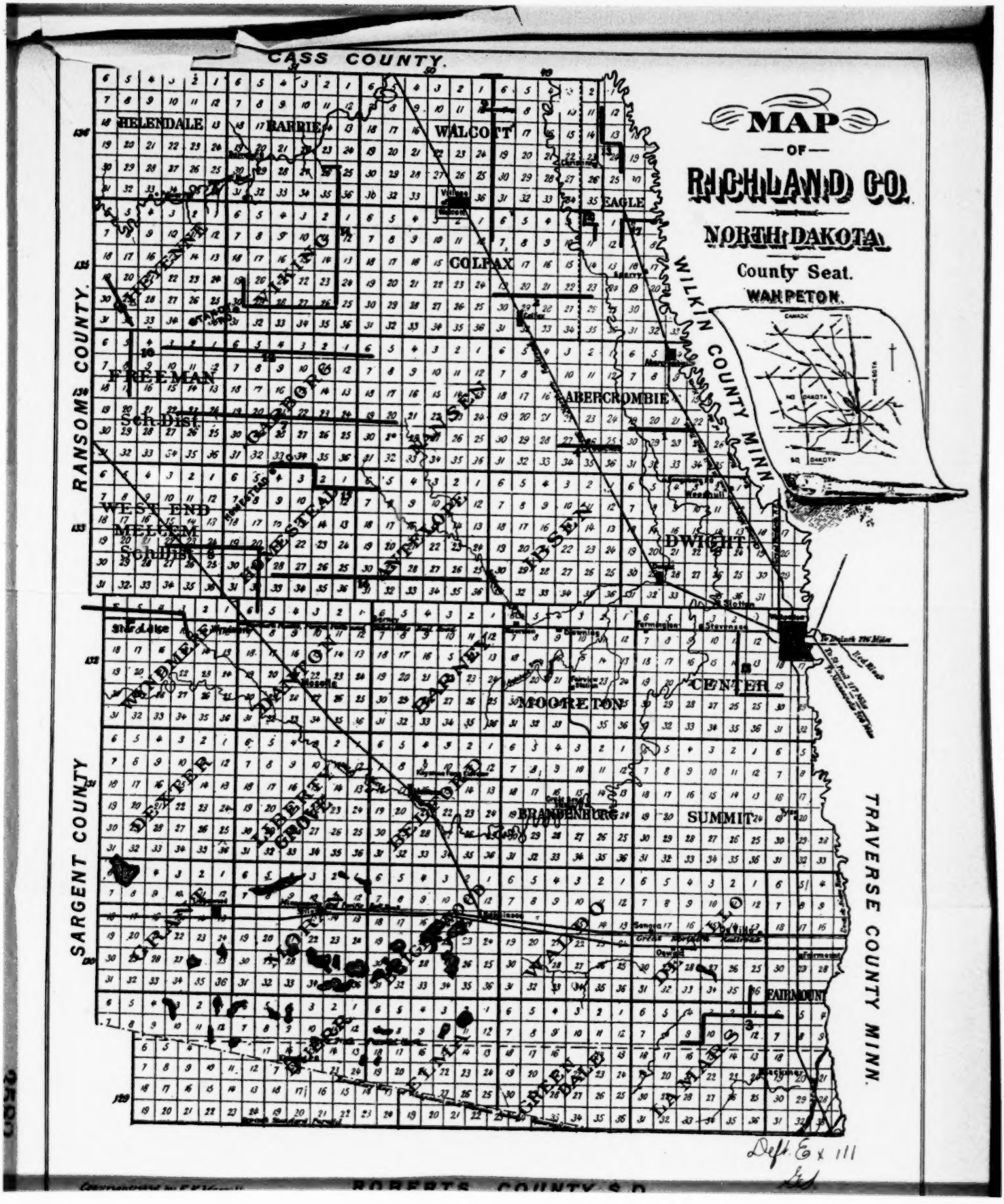
MAP
OF
RICHLAND CO.
NORTH DAKOTA
County Seat.
WAHPETON.
CASS COUNTY.
RANSOM COUNTY.
SARGENT COUNTY
TRAVERSE COUNTY MINN.
WILKIN COUNTY MINN.
HELENDALE
BARRIE
WALCOTT
COLFAX
EAGLE
FREEMAN
Sch. Dist.
WEST END
MELCEM
Sch. Dist.
ABERCROMBIE
DWIGHT
CENTER
MOORETON
BRANDENBURG
SUMMIT
FAIRMOUNT
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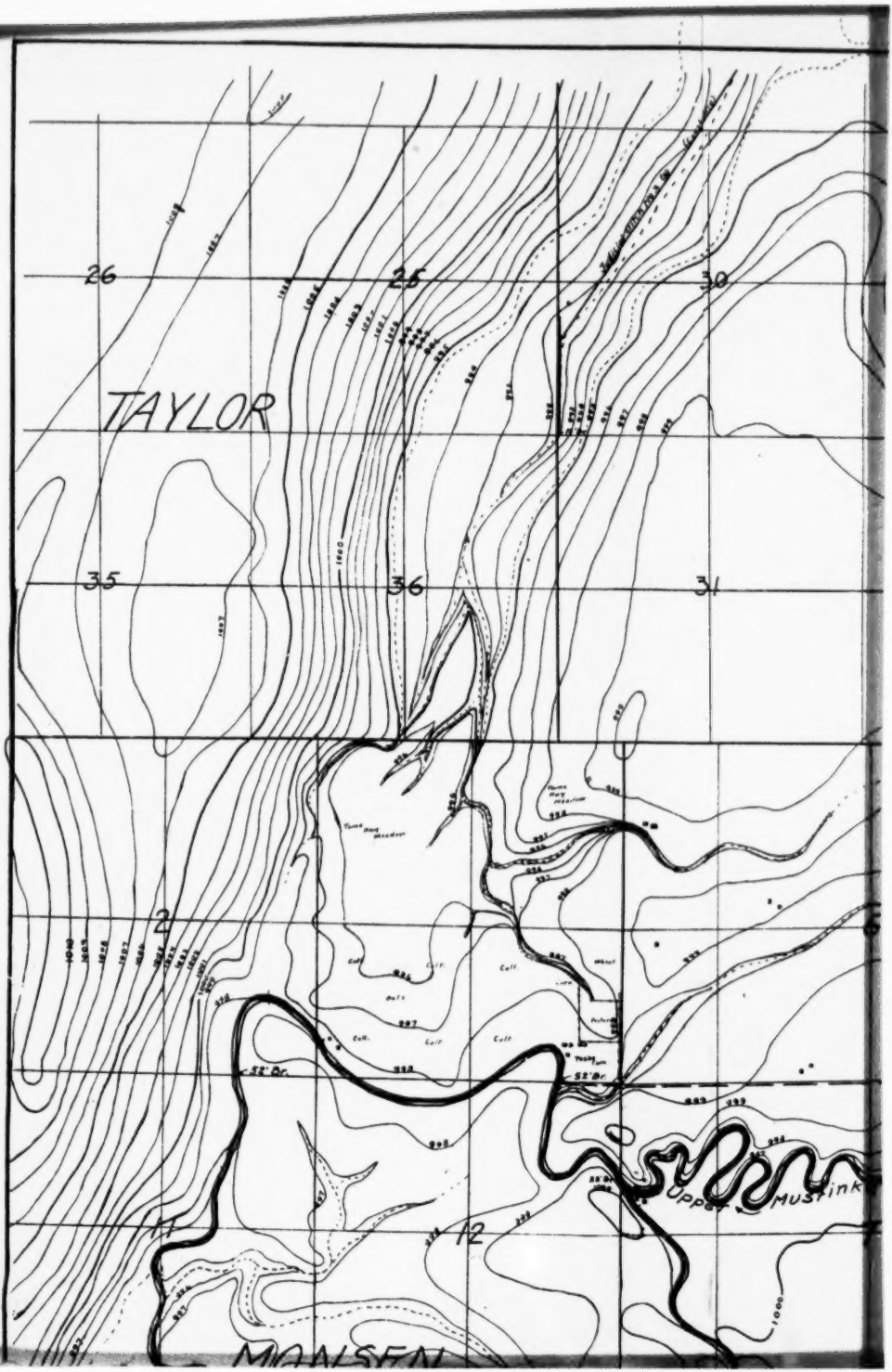
Dept. Ex 111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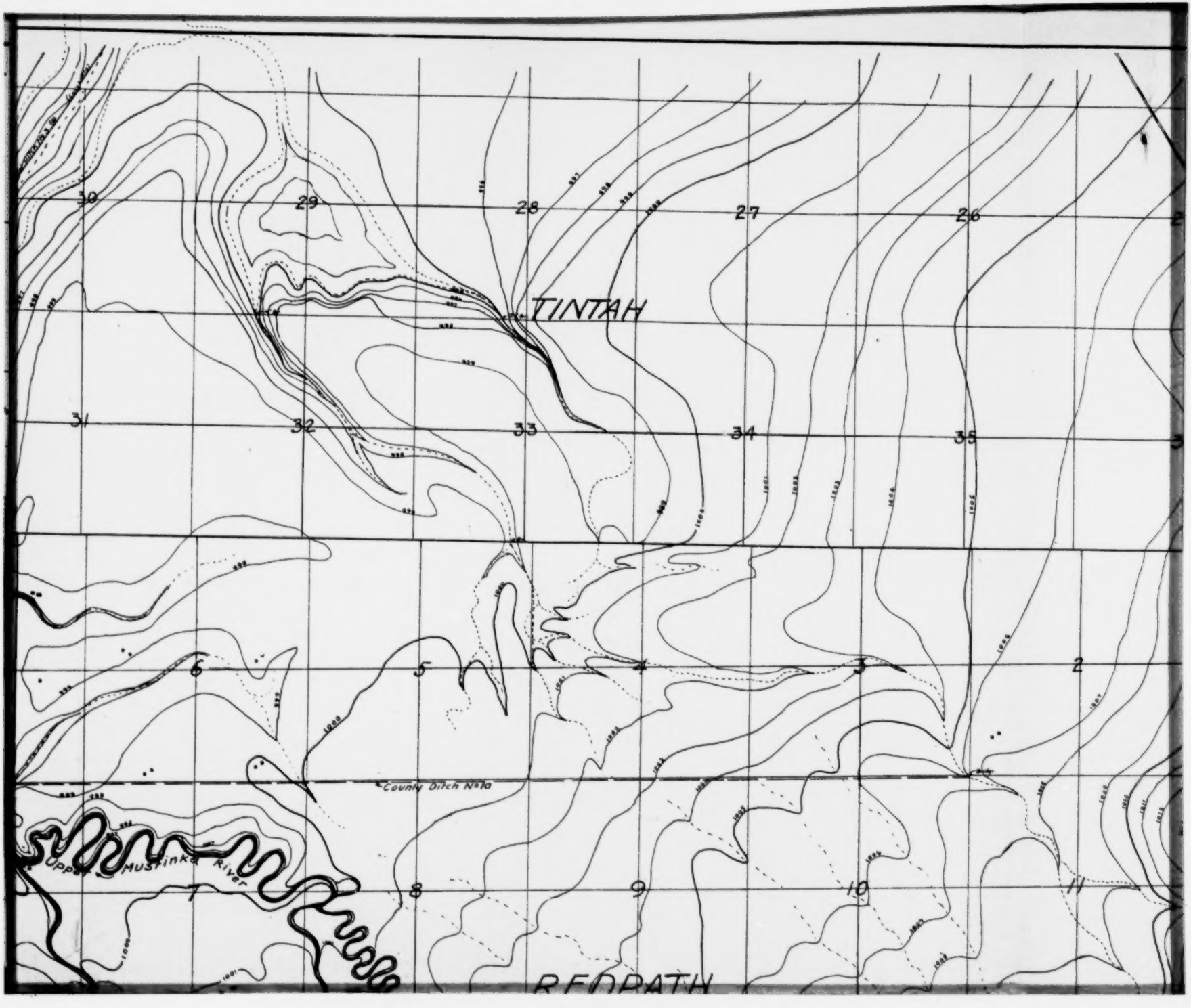
Upper Muskin
MANSFIELD


TINTAH
REDPATH
County Ditch No 10
Upper Mustinka River
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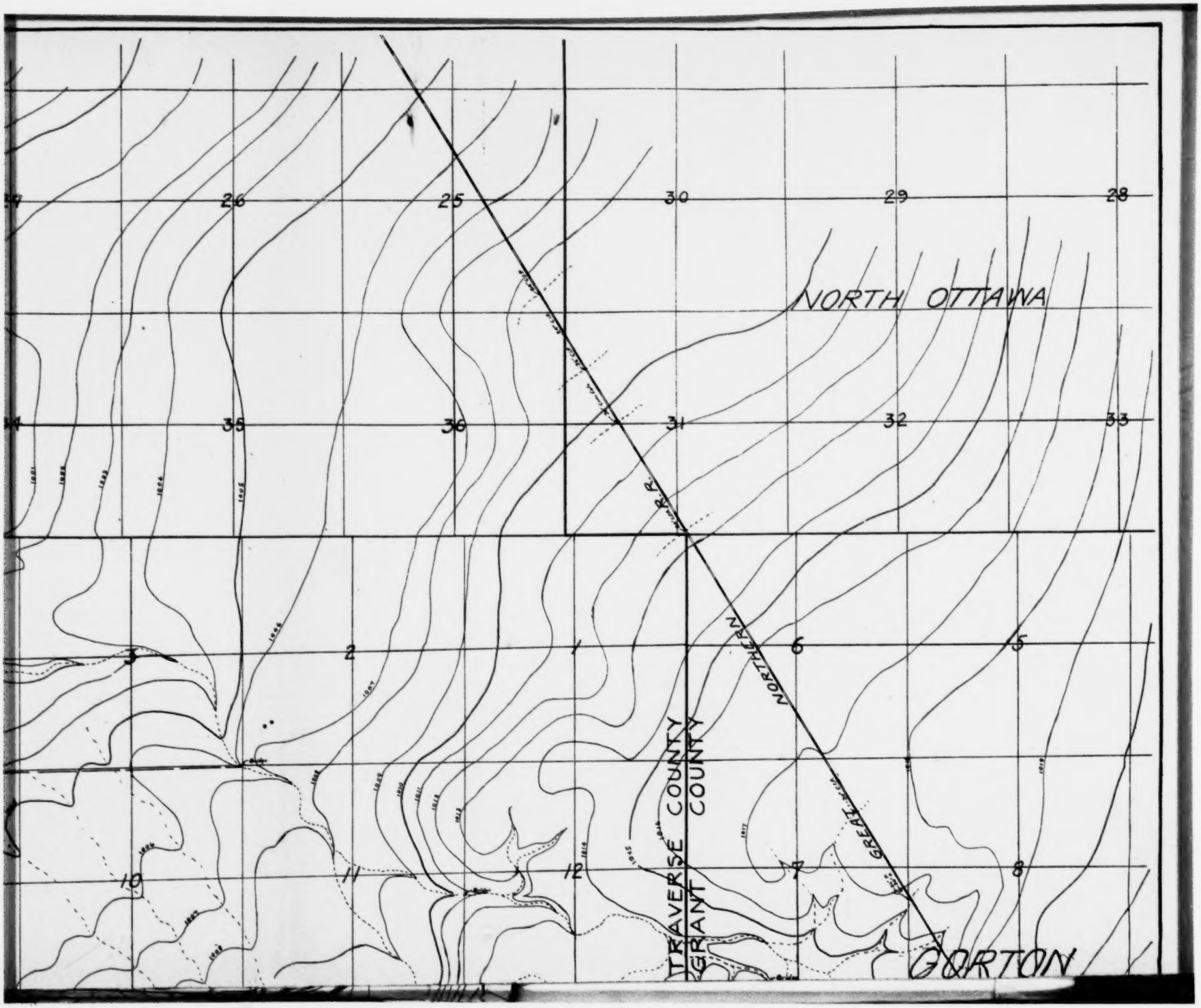
NORTH OTTAWA
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GRANT COUNTY
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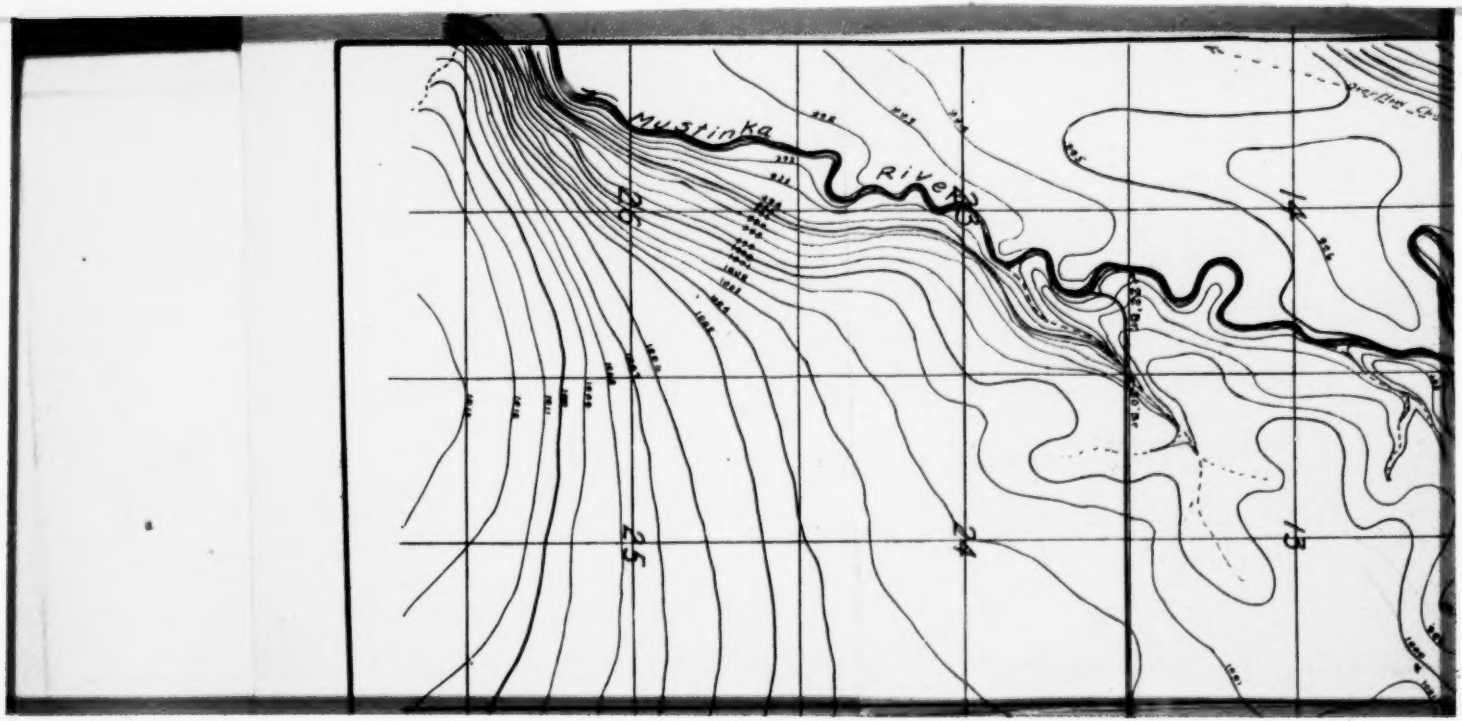
Mustinka
River
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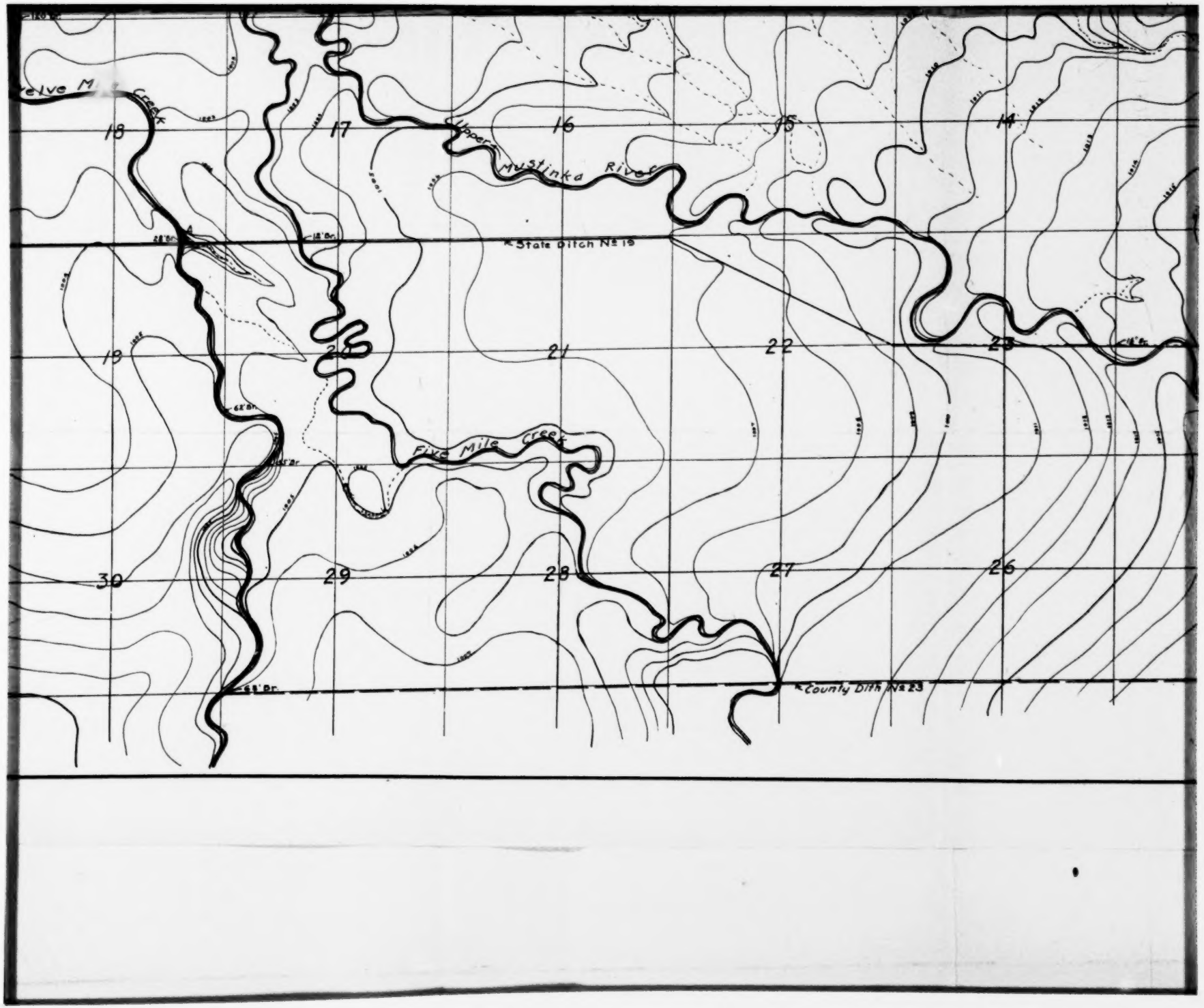
Upper Mustinka River
State Ditch No 19
Five Mile Creek
County Ditch No 23
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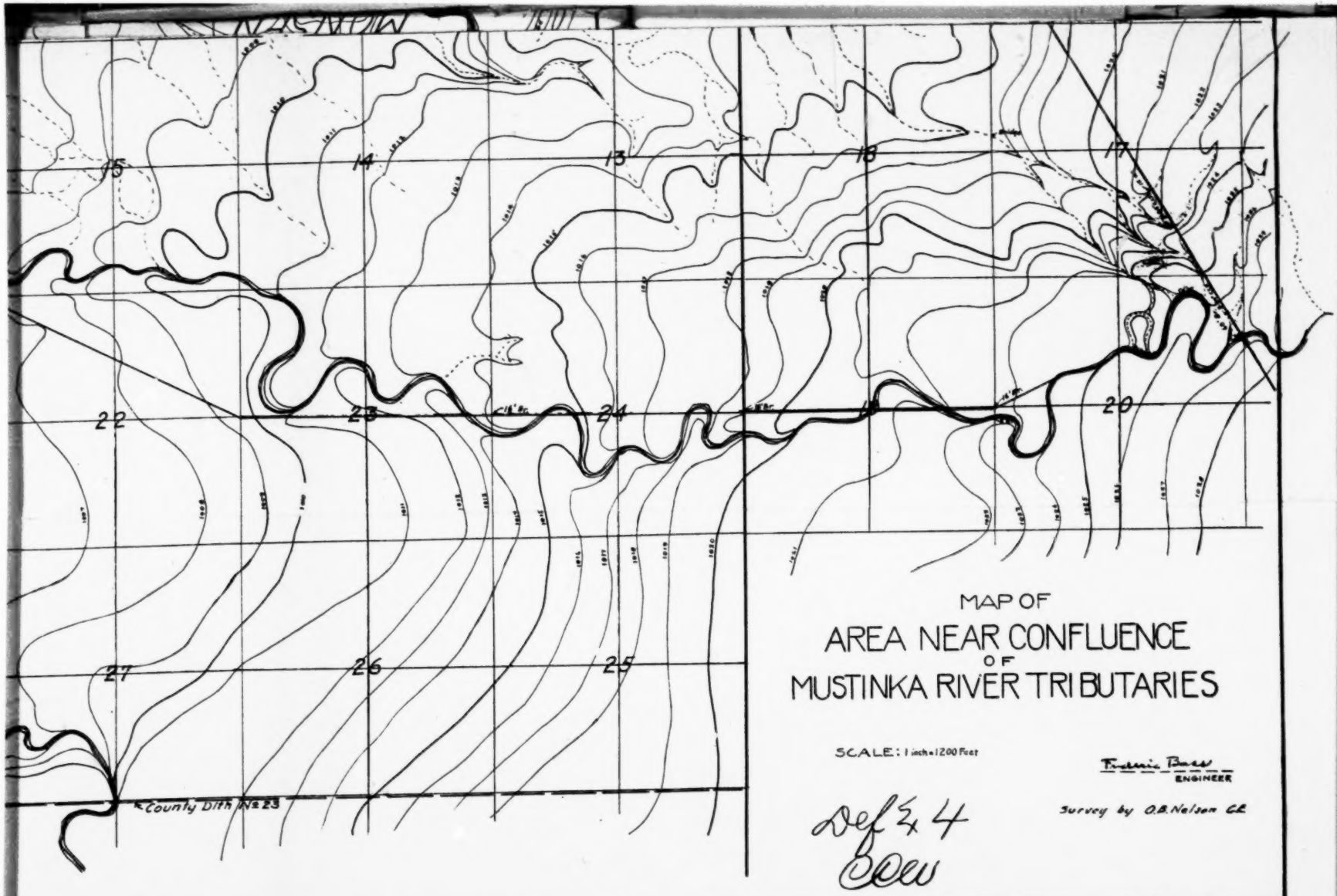

MAP OF

AREA NEAR CONFLUENCE OF MUSTINKA RIVER TRIBUTARIES

SCALE: 1 inch = 1200 Feet

Frederic Bonn
ENGINEER

Survey by O.B. Nelson CE

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3584 *Defendant's Exhibit No. 5.*

To the Speaker of the House of Representatives of the State of Minnesota:

Your Committee, appointed by the Speaker of this House to inquire into the truth of the averments contained in the sundry petitions of citizens of Traverse County, Minnesota, to the Legislature of this state praying for the relief against overflow of lands tributary to and in the vicinity of the Mustinka River in said county caused by so-called Mustinka State Ditch, and for damages sustained by owners of such lands in the past, hereby report and show:

(1) That you- committee on the 11th, 15th, and 16th, of March, 1909, met at the State Capitol and heard the said petitioners and other citizens of said Traverse County, and the State Drainage Engineer, relative to the statements and matters contained in said petitions; that all the persons so appearing and giving testimony concerning said matters, were first duly sworn and such testimony reduced to writing.

(2) That the following named persons appeared before your committee at said hearing and were heard, namely: Alfred Anderson, John Elofson, David J. Neumann, Harry D. Nuemann, Otto C. Nuemann, Karl Krenz, Gust Dahlstrom, William Babst, C. E. Ringstrom, Gustav Skoglund, William Lohse, Thos. Heggan, James M. Fish, S. E. Oscarson, John McElgun, A. C. Palmquist, William Ringdahl, Cark O. Saterbak, J. B. Burns, and Edward Rustad and George A. Ralph, State Drainage Engineer.

(3) After hearing all of the said persons and the testimony offered by them, and after due examination and consideration of such testimony, including Exhibits "A," "B," "C," "D" and "E" hereto attached, which were introduced and received in evidence at said hearing, your committee finds as facts supported by such
3585 testimony the following:

(1) That along and adjacent to the said Mustinka River in said Traverse County, there are upwards of 8,000 acres or more of good, first-class, tillage farming lands, which have been all under cultivation, and have in years passed, produced large crops of wheat, oats, flax, hay and other small grains.

(2) That prior to the year 1897, no part of the said lands were ever, since the settlement of that part of the said County over thirty years ago, overflowed, and no crops thereon damaged or destroyed by the waters of the said Mustinka River, but on the contrary, said lands in said years, were all among the most valuable farms in said Traverse County, and the rainfall in said county and the territory

drained by said river, in the years prior to 1897, and particularly in the years 1880, 1881, 1882 and 1883, was as heavy, extensive and excessive as in any year or years subsequent thereto.

(3) That in the years 1894 and 1896, a certain drainage ditch extending from a point in Section 20, Township 128, Range 4, in Grant County, Minnesota, thence westerly about 6½ miles, to the point where the so-called "Twelve Mile Creek", a fork of the said Mustinka River, crosses the Section line between Sections 18 and 19 in Township 128, Range 45 in said Traverse County, was constructed by the state of Minnesota, to drain its own lands in said Grant County.

(4) That the said Mustinka State Ditch heretofore referred to, and so constructed by the State of Minnesota, diverted and conveyed into said Mustinka River, waters that theretofore naturally flowed northward and emptied into Rabbit River, and which waters
3586 before the construction of said ditch never found its way into the said Mustinka River.

(5) That the said ditch runs thru low, flat and marshy country in said Grant County, resulting in a large flow of water thru said ditch into the said river, and by reason of a large volume and rapid flow of the waters in said ditch, it caused to be conveyed into said river more than the said river could receive and carry off within its channel.

(6) That in the years 1897, 1899, 1900, 1903 and 1905, 1906, 1907 and 1908, the said Mustinka State Ditch conveyed into the said river such large amounts of water that the said river in each of said years, after the crops on the lands hereinbefore referred to, had been planted and were growing, overflowed its banks and flooded the said lands and destroyed most of the crops growing thereon.

(7) That the said river, owing to its winding course and slight fall was — has been unable to carry off within its banks the excess water so conveyed into it by and thru the said State Ditch, and that frequently such overflows would occur when no rain of any consequences had fallen in the territory, naturally drained by the said river and its tributaries. That during the above mentioned years, the use of some entire farms and large portions of many others in that section so overflowed by the said river, have been destroyed and two of the farms have been lost to the owners and they have been compelled to move off, and the lands so subjected to overflow have greatly depreciated in value, while in the absence of such overflows and damage to crops and property, they would be worth on the average of $40.00 per acre.

(8) That prior to the construction of the said state Ditch, the said Mustinka River had ample capacity to carry off within
3587 its channel all the waters that naturally flowed into the same from the streams and watercourses naturally emptying

into the same, and no damage or injury to crops or property resulted from excessive rains.

(9) That your Committee is unable to state the exact amount of damages sustained by the farmers and landowners whose lands have been subjected to such overflows from the said river, but from the evidence of the petitioners who appeared before the committee and testified, we find that damages to crops sustained by them aggregate $28,302, and it also appeared from the evidence adduced by said petitinoners and other witnesses, that many other farmers who did not appear nor joined in the petitions herein, sustained large damage to their crops and lands and that the total number of acres of farm lands subjected to said overflows, aggregated 8,000 acres, averaging in value, if not so overflowed, to $40 per acre, but by reason of the said overflows, all said body of land containing as stated about 8,000 have been depreciated in value so that the present market value thereof is not in excess of $15 per acre, and that such depreciation in value has naturally resulted from the said overflows thereof. Also that the owners of the said lands, other than the petitioners herein, have during the years referred to sustained crop losses caused by said overflows, or substantially the same average amount per acre as the losses sustained by the petitioners herein.

(10) That from the testimony of the State Drainage Engineer, it appears that if the said State Ditch should be extended from its present outlet, thence west about 2½ miles to where it will again intersect the said river, thus cutting off a large bend in said
3588 river, and thence continuing downstream in said river to such a point and place as it shall be found necessary to obtain an adequate outlet for the waters thereof, thence west to Lake Traverse, the desired relief will thus be obtained and that the total cost of such improvements will amount to from $30,000 to $35,000.

In conclusion, your committee find that the averments contained in the said petitions are substantially true, and in the opinion of your committee, the said Mustinka State Ditch is mostly if not wholly responsible for the overflow of said lands and the resulting destruction and devastation of crops and property adjacent thereto.

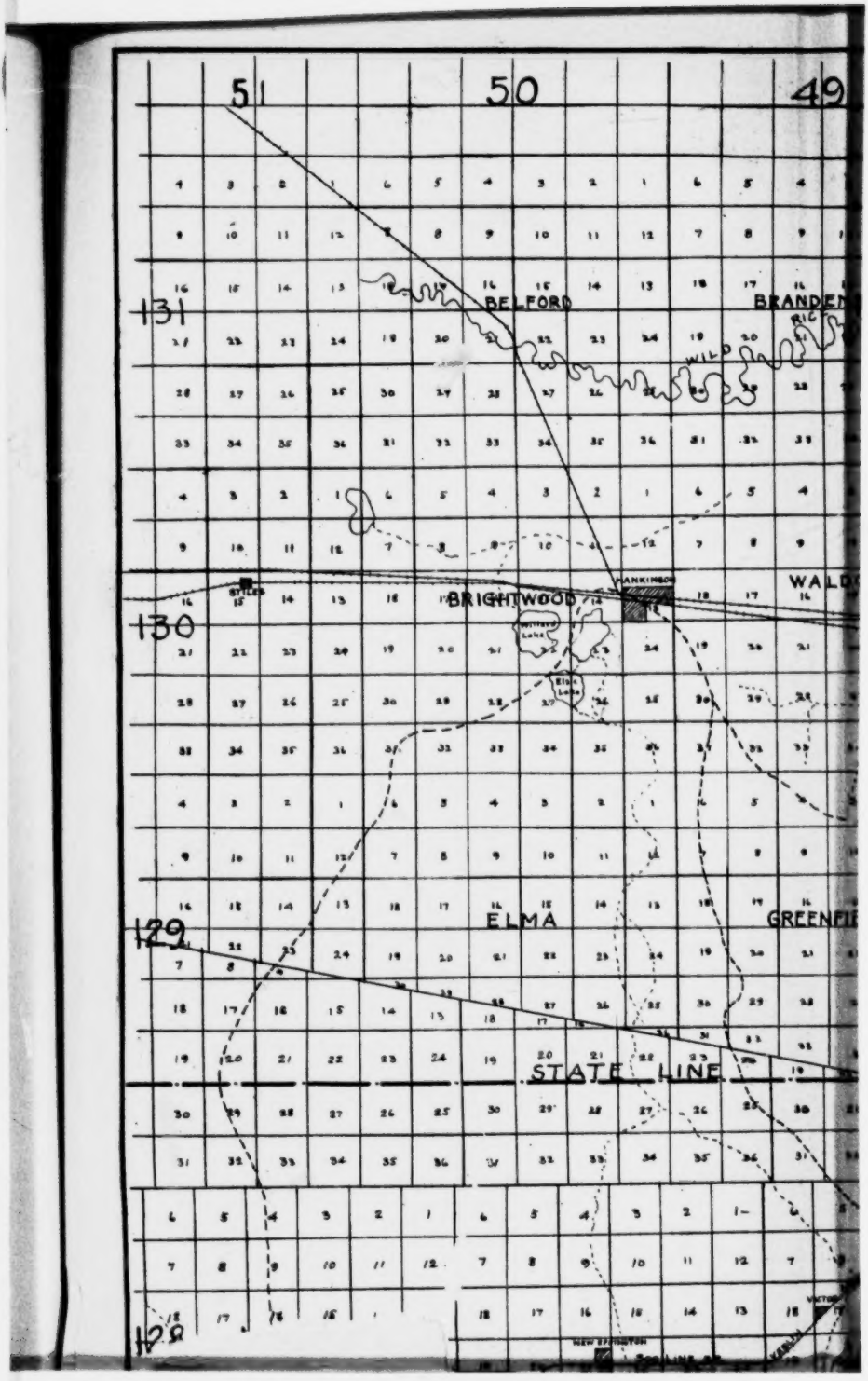
Your committee further finds that in order to secure for the said petitioners and other farmers and landowners, whose lands in the past have been subjected to such damage from the overflow of the said river, that it will be necessary to extend the said ditch from its present outlet as hereinbefore recommended by the State Drainage Engineer, as the most feasible plan for obtaining such relief and your committee recommends and urges that a sufficient apportionment be made by this Legislature for the purpose and with a view to the improvement of the said Mustinka river and the extension of the said State Ditch as hereinbefore referred to and as suggested and recommended by the State Drainage Engineer, and it is the opinion of this committee that had the said State Ditch been

continued as before herein mentioned, the said lands would never have overflowed from the waters of the said State Ditch.

——— ———,
Chairman.

Dated —.

(Here follow maps marked pages 3589 to 3601, inclusive.)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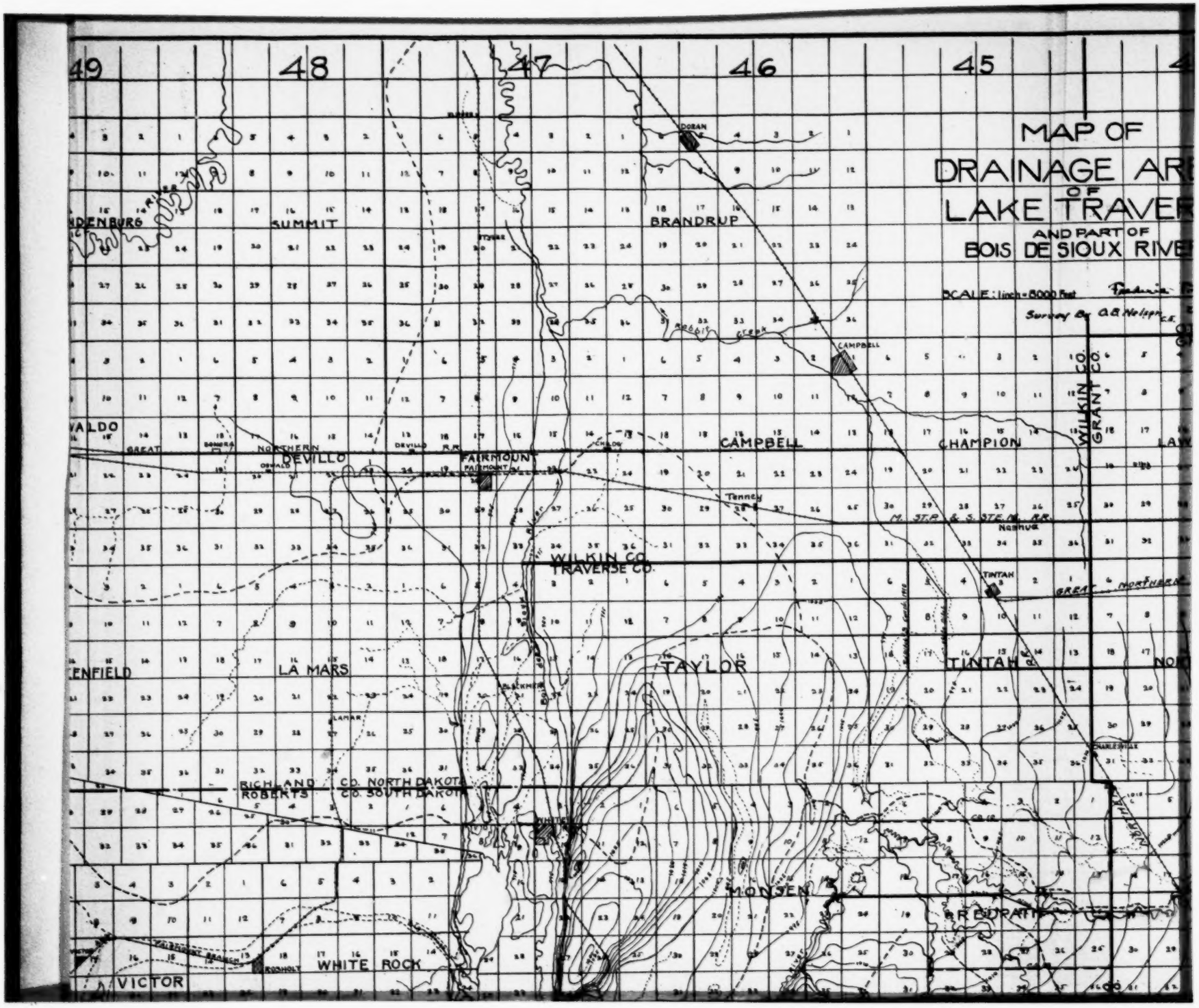
BRIGHTWOOD
WALD
ELMA
GREENFIE
STATE LINE


MAP OF
DRAINAGE AR
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LAKE TRAVER
AND PART OF
BOIS DE SIOUX RIVE
SCALE: 1 inch = 8000 Feet
Surveyed by A.B. Nelson C.E.
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SUMMIT
BRANDRUP
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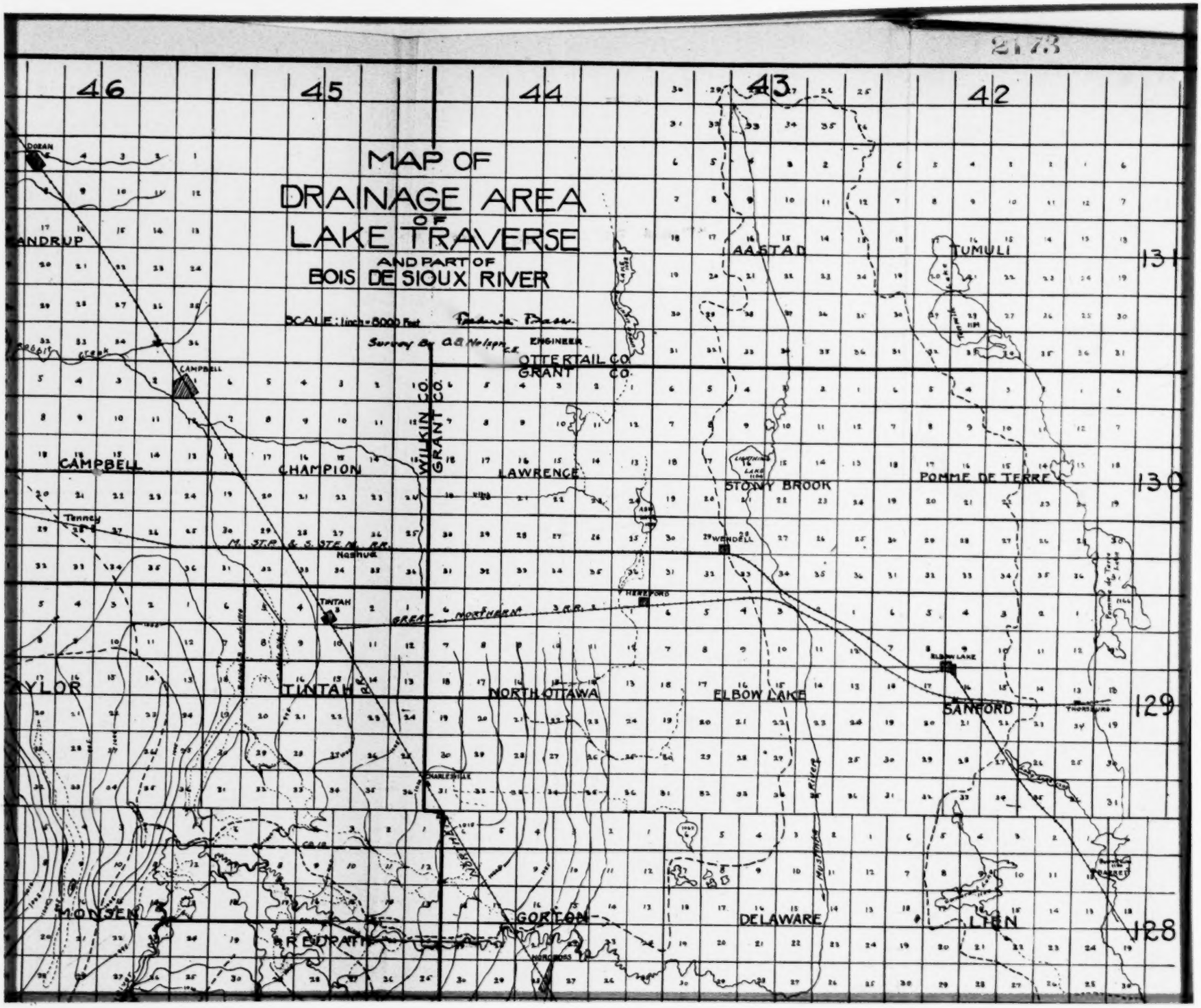
WILKIN CO.
GRANT CO.
CHAMPION
DEVILLO
FAIRMOUNT
WILKIN CO.
TRAVERSE CO.
TINTAH
LA MARS
TAYLOR
RICHLAND CO. NORTH DAKOTA
ROBERTS CO. SOUTH DAKOTA
MONSEN
WHITE ROCK
VICTOR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MAP OF
DRAINAGE AREA
OF
LAKE TRAVERSE
AND PART OF
BOIS DE SIOUX RIVER
SCALE: 1 inch = 8000 Feet
Frederic Pease.
ENGINEER
Survey By C.B. Nelson C.E.
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GRANT CO.
WILKIN CO.
GRANT CO.
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ANDRUP
CAMPBELL
CAMPBELL
CHAMPION
LAWRENCE
AASTAD
TUMULI
STONY BROOK
POMME DE TERRE
WENDELL
Tenney
Nashua
M. St.P. & S. Ste M. R.R.
TINTAH
GREAT NORTHERN R.R.
HERMOSA
ELBOW LAKE
SANFORD
TAYLOR
TINTAH
NORTH OTTAWA
ELBOW LAKE
CHARLESVILLE
HONSEN
GORTON
DELAWARE
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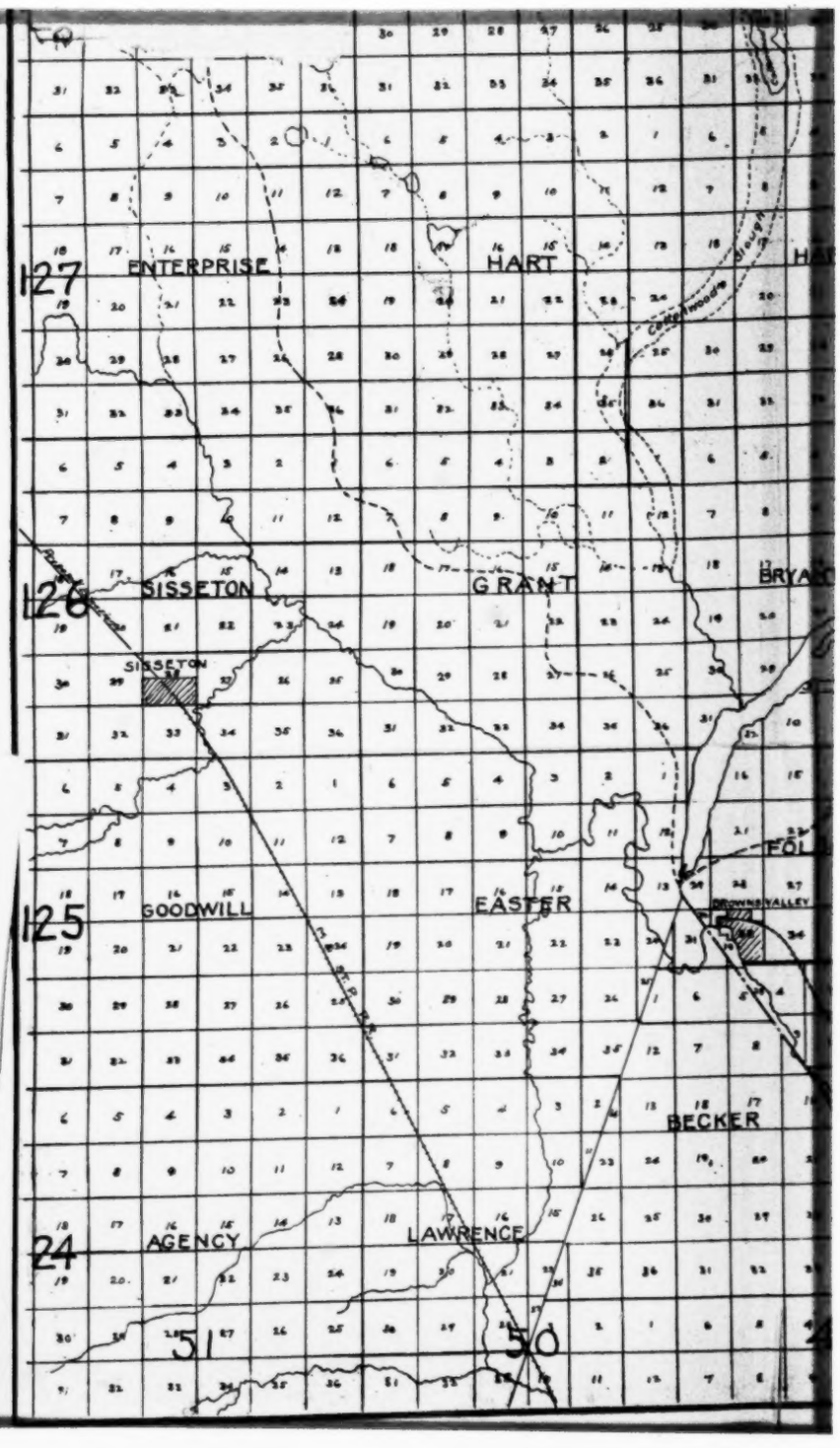
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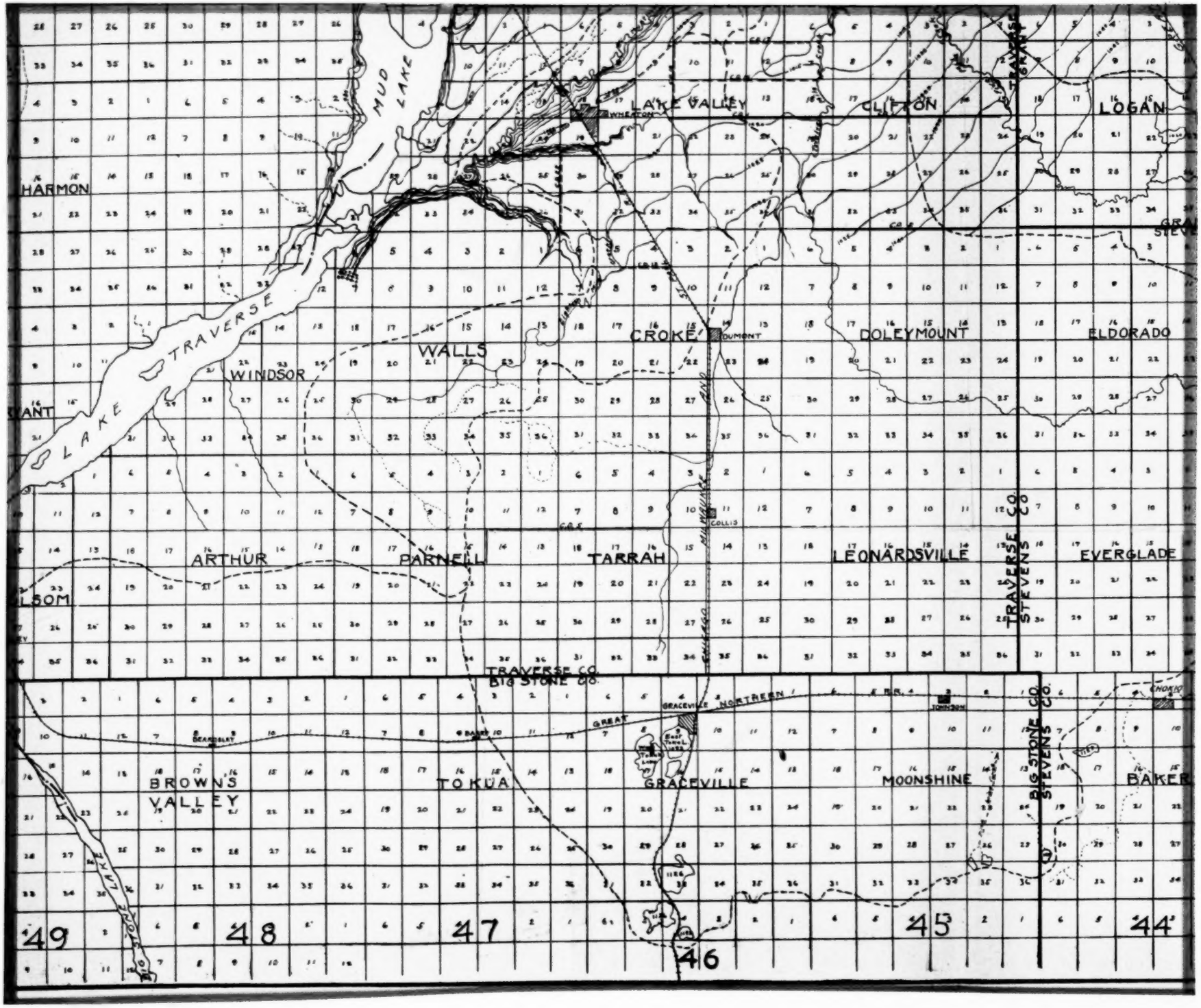
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LOGAN
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STEVENS CO.
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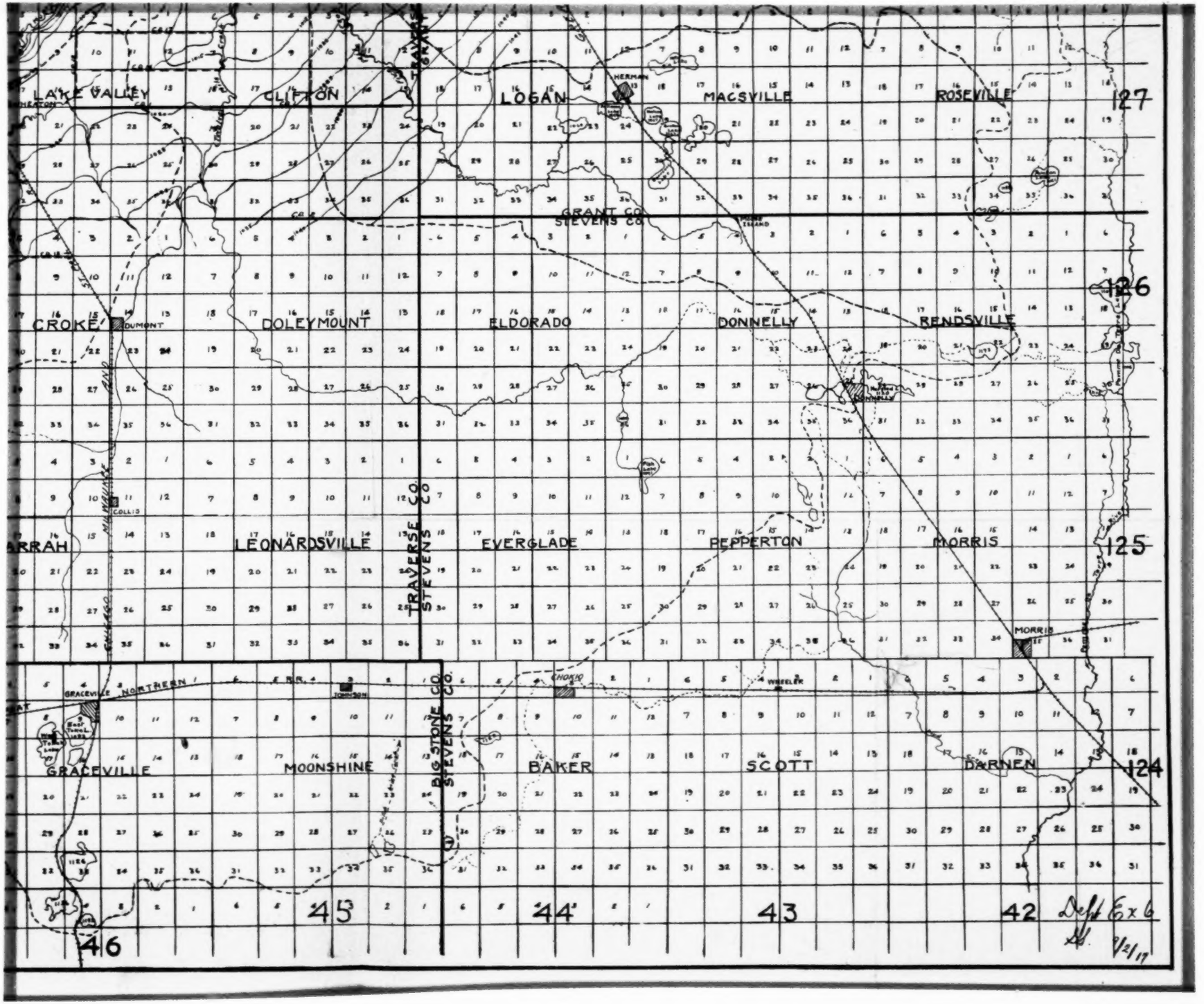
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TRAVERSE CO.
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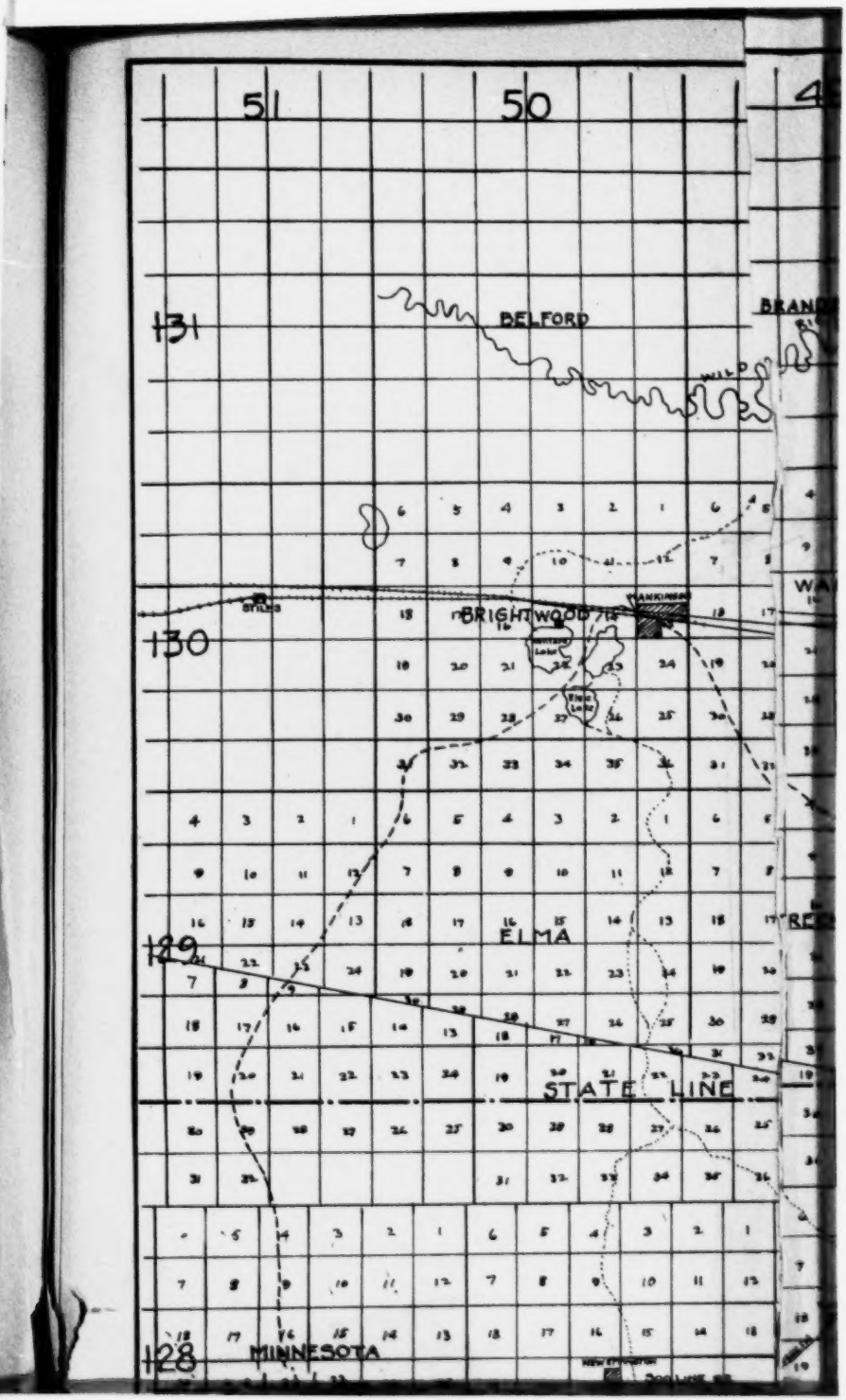
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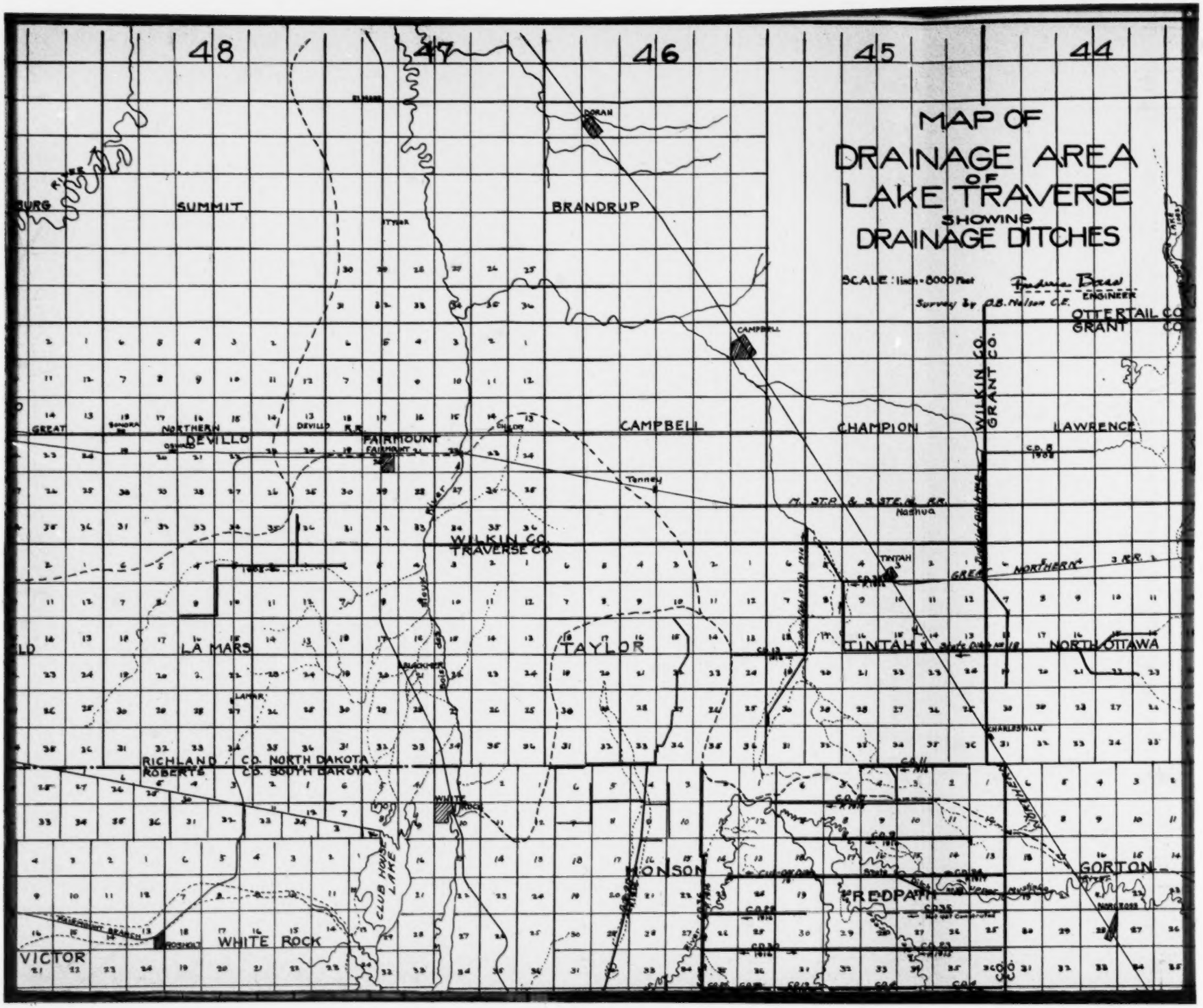
MAP OF
DRAINAGE AREA
OF
LAKE TRAVERSE
SHOWING
DRAINAGE DITCHES
SCALE: 1 inch = 8000 Feet
Frederick Brand ENGINEER
Survey by O.B. Nelson C.E.
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SUMMIT
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ROBERTS CO. SOUTH DAKOTA
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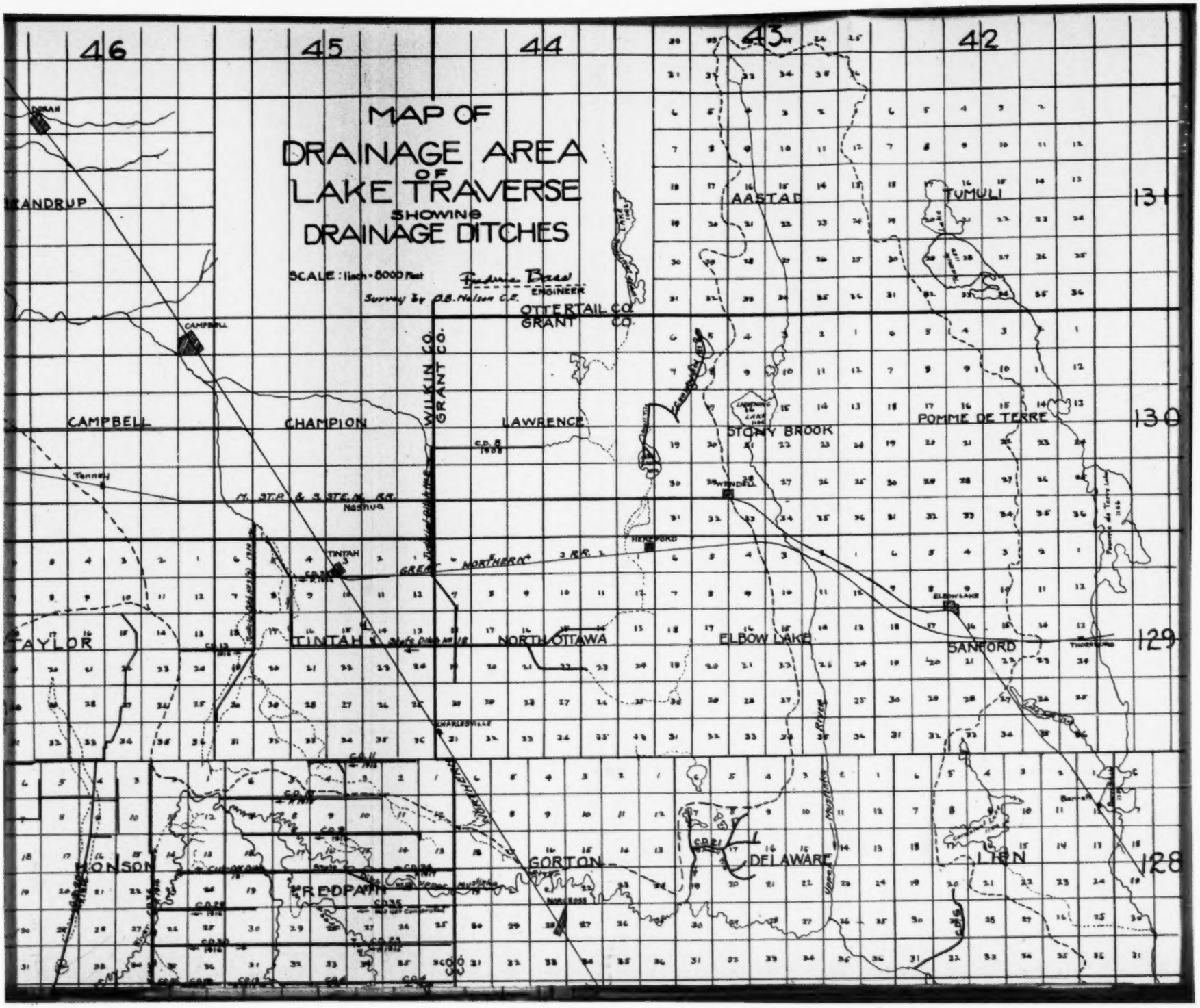
CAMPBELL
DORAN
TINTAH
CHARLESVILLE


MAP OF
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DRAINAGE DITCHES
SCALE: 1 inch = 8000 Feet
Frederic Brandt ENGINEER
Survey by P.B. Nelson C.E.
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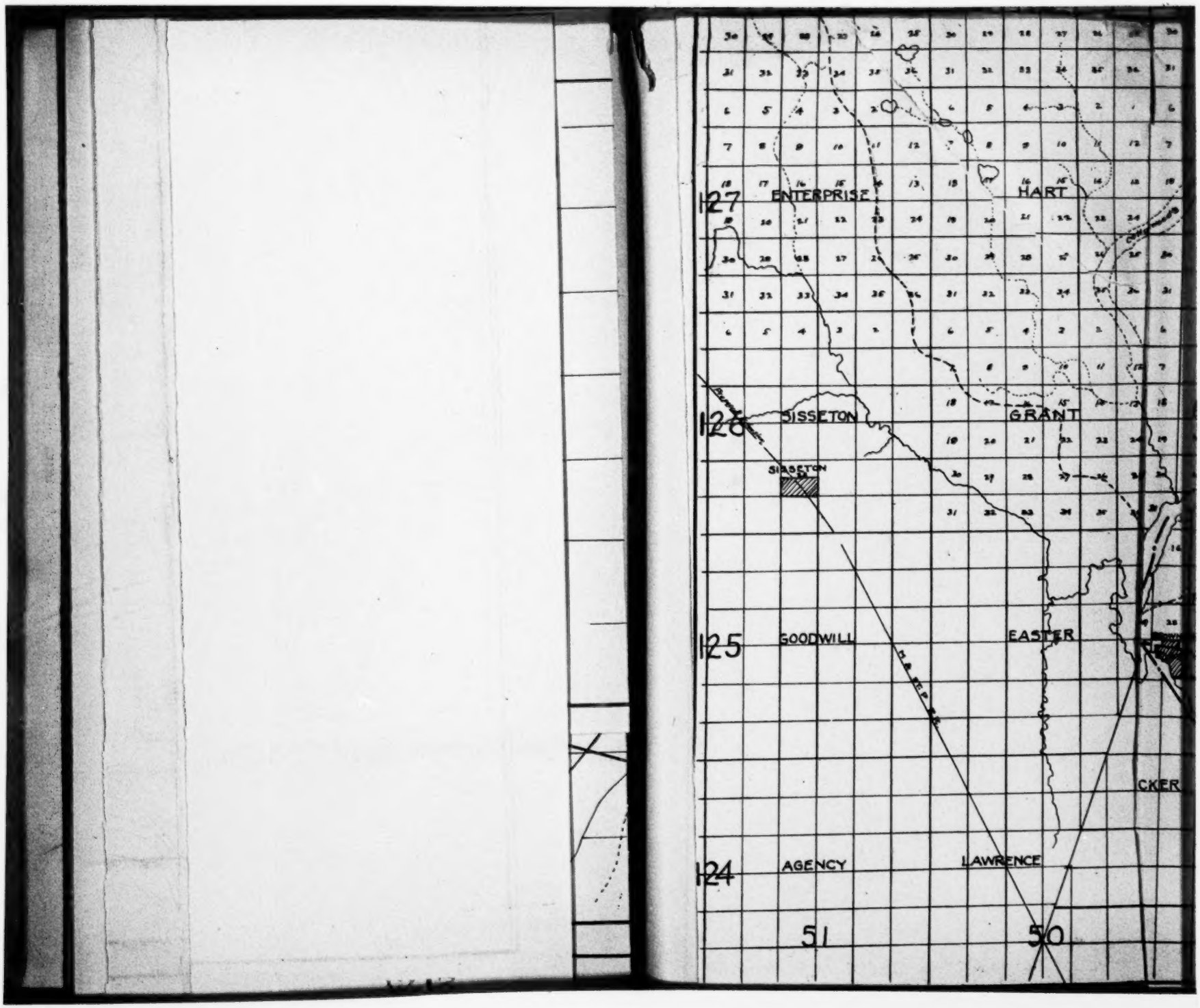
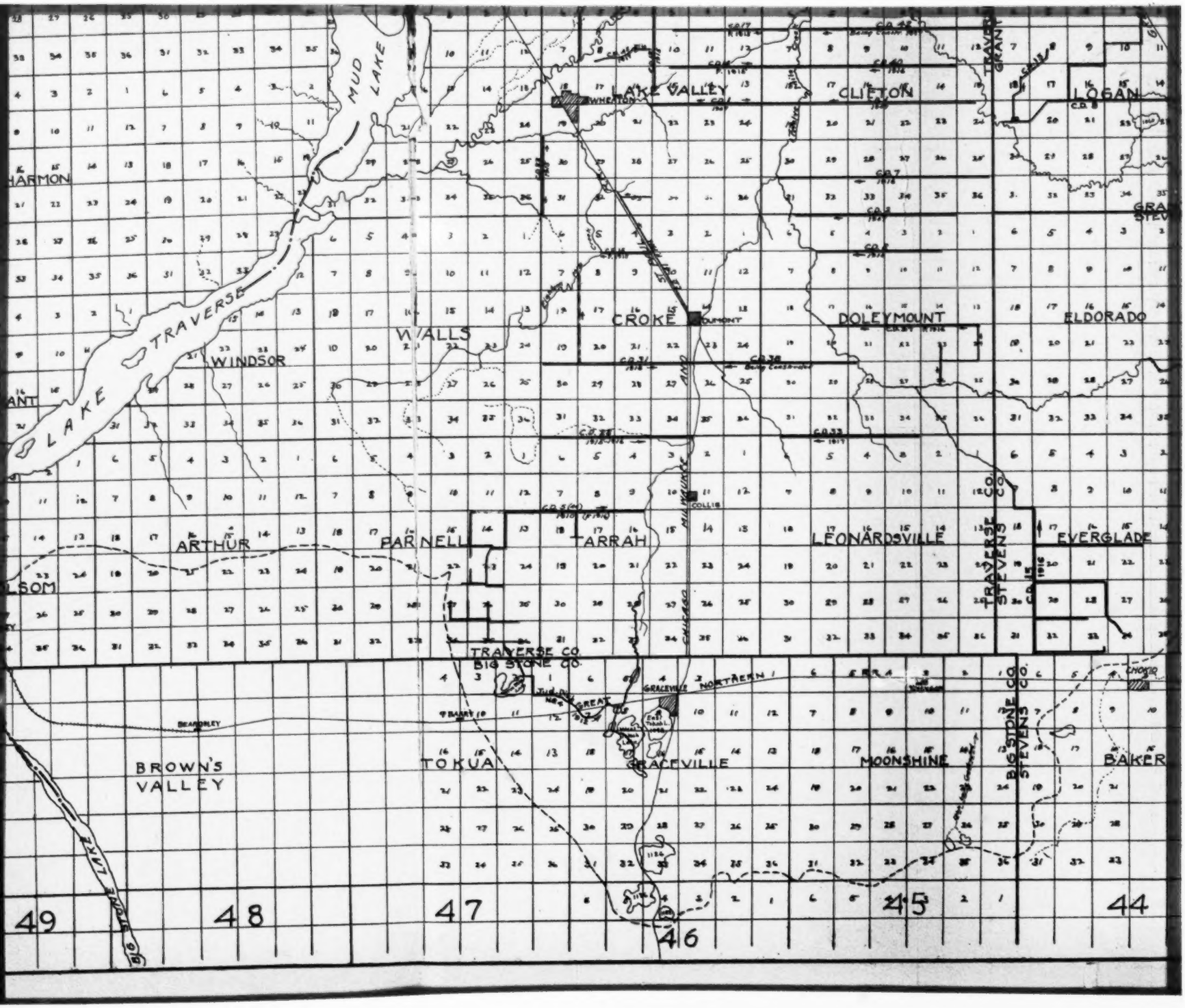
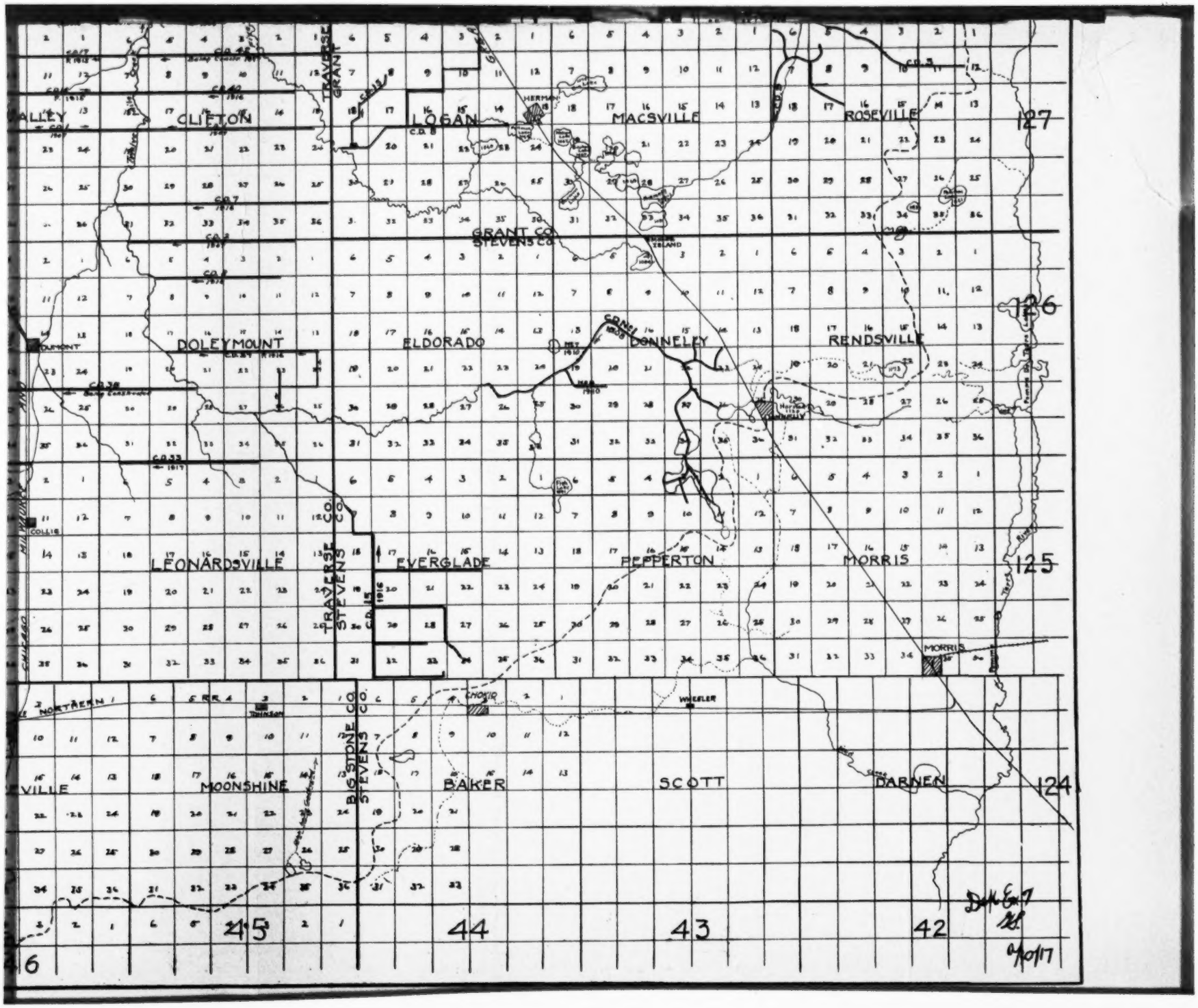
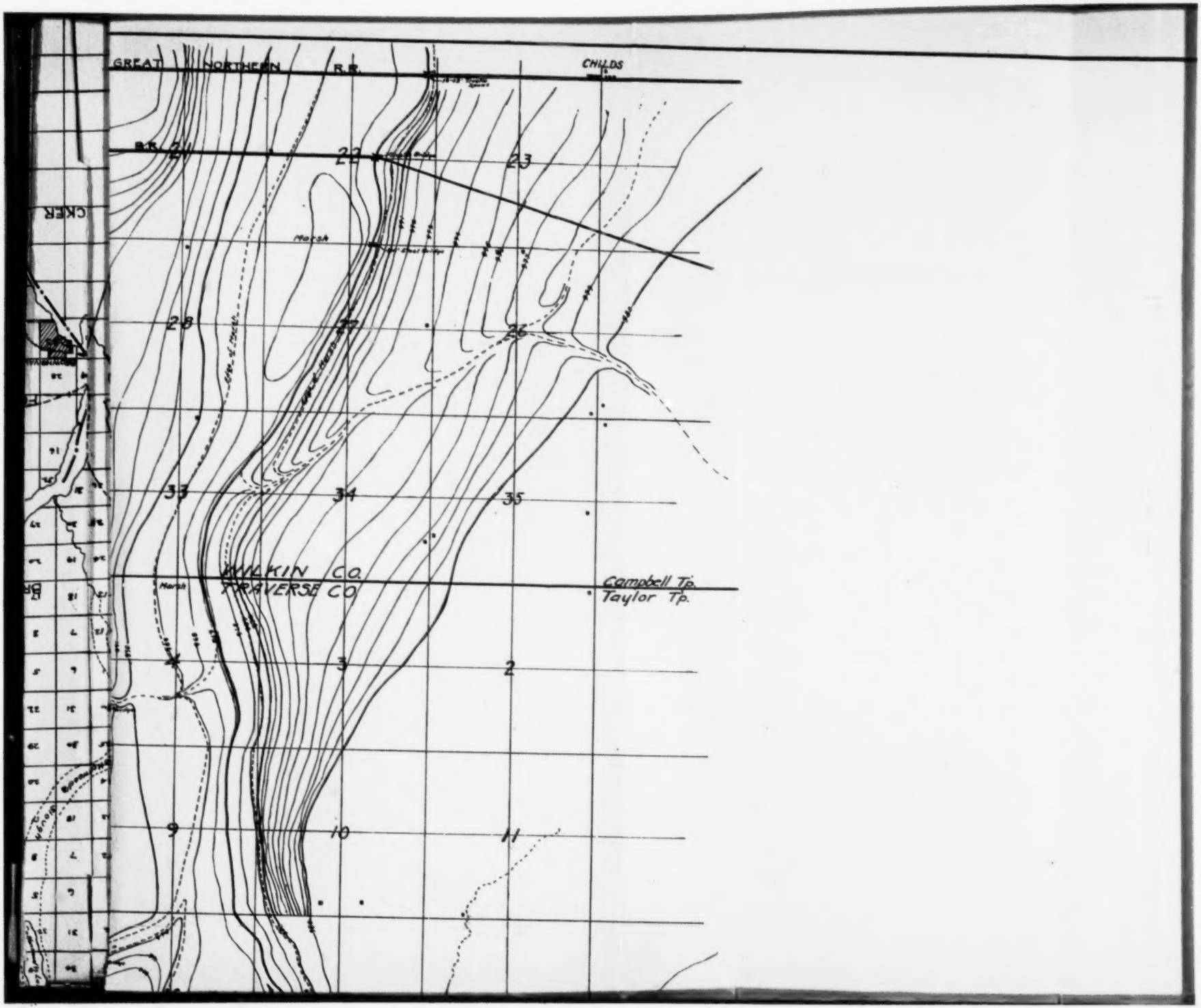
CR 998
CR 999
CR 1000

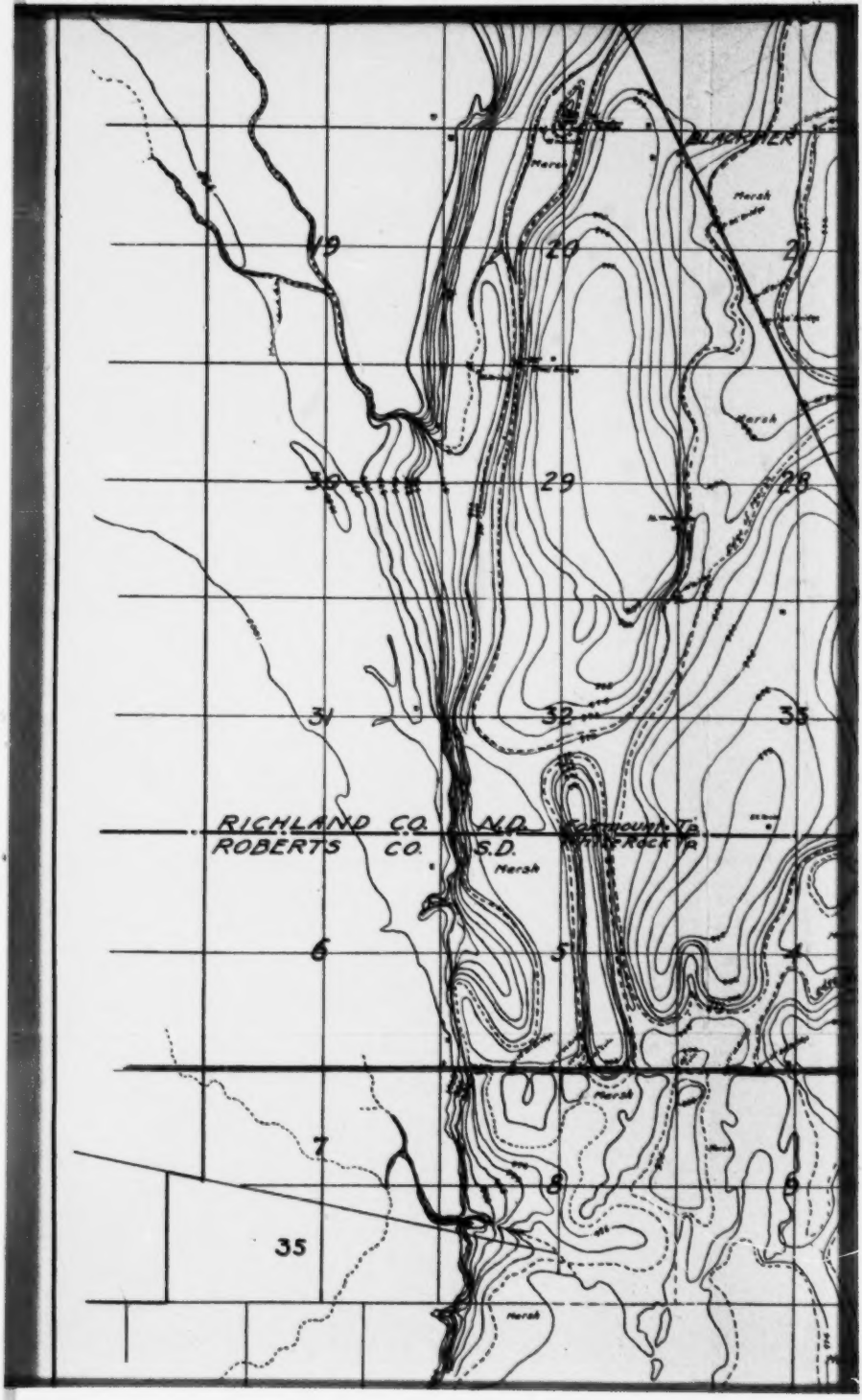

127
ENTERPRISE
HART
126
SISSETON
GRANT
SISSETON
125
GOODWILL
EASTER
CKER
124
AGENCY
LAWRENCE
51
50


MUD LAKE
LAKE TRAVERSE
LAKE VALLEY
CLIFTON
LOGAN
WHEATON
CROKE
DOLEYMOUNT
ELDORADO
WALLS
WINDSOR
ARTHUR
PARNELL
TARRAH
LEONARDSVILLE
EVERGLADE
TRAVERSE CO
BIG STONE CO
STEVENS CO
GRACEVILLE
TOKUA
MOONSHINE
BAKER
BROWN'S VALLEY
BIG STONE LAKE
CHICAGO
NORTHERN
GREAT
49
48
47
46
45
44


CLIFTON
LOGAN
MACSVILLE
ROSEVILLE
DOLEYMOUNT
ELDORADO
DONNELEY
RENDSVILLE
LEONARDSVILLE
EVERGLADE
PEPPERTON
MORRIS
MOONSHINE
BAKER
SCOTT
DARNEN
GRANT CO.
STEVENS CO.
TRAVERSE CO.
BIG STONE CO.
127
126
125
124
44
43
42
46

GREAT
ST. PAUL & SAULT STE. MARIE R.R.
FAIRMONT
19
20
30
29
31
32
6
7
8
17
CHICAGO MILWAUKEE & ST. PAUL R.R.
LAKE IN
FAIRMOUNT Tp.


GREAT NORTHERN R.R.
CHILDS
R.R.
21
22
23
Marsh
26
33
34
35
WALKIN CO.
TRAVERSE CO.
Campbell Tp.
Taylor Tp.
Marsh
3
2
9
10
11


BLACKMER
19
20
21
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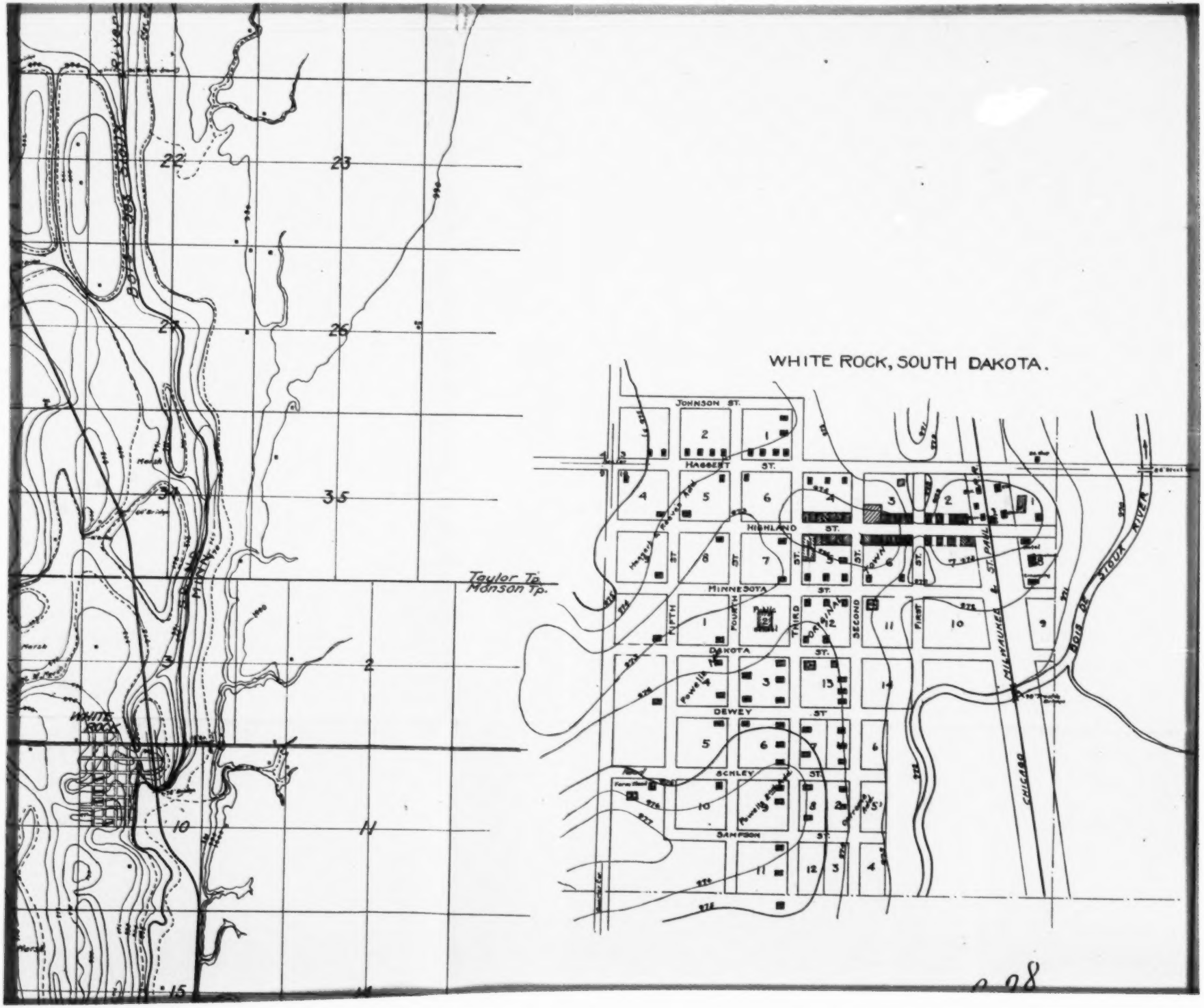
29
28
31
32
33
RICHLAND CO. N.D.
ROBERTS CO. S.D.
Marsh
6
5
4
7
8
9
35
Marsh


WHITE ROCK, SOUTH DAKOTA.
Taylor Tp.
Hanson Tp.
WHITE ROCK
JOHNSON ST.
HAGGEST ST.
HIGHLAND ST.
MINNESOTA ST.
DAKOTA ST.
DEWEY ST.
SCHLEY ST.
SAMPSON ST.
FIFTH
FOURTH
THIRD
SECOND
FIRST
CHICAGO
MILWAUKEE & ST. PAUL
SIOUX RIVER

990
980
970
960
950
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880
870
860
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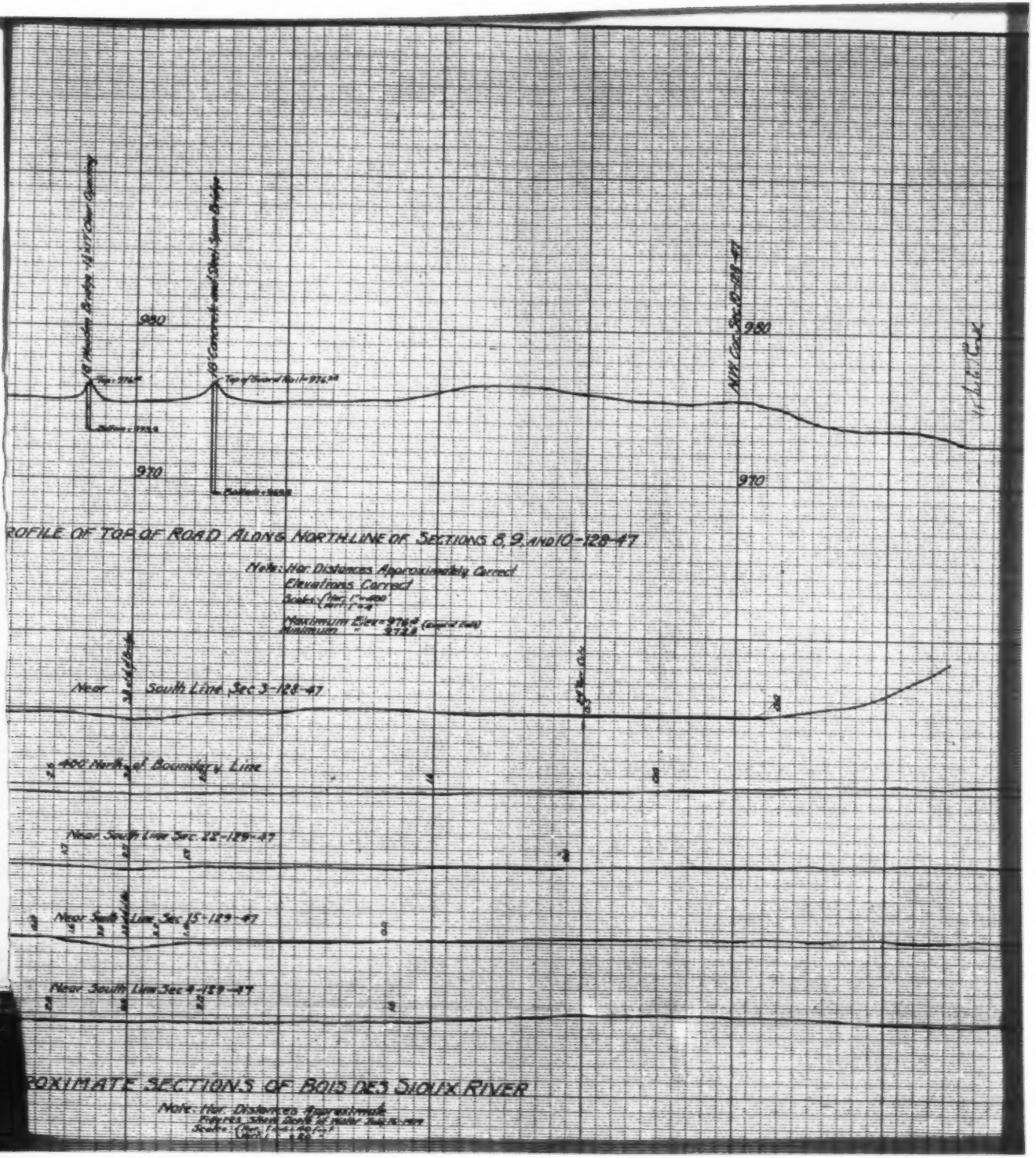
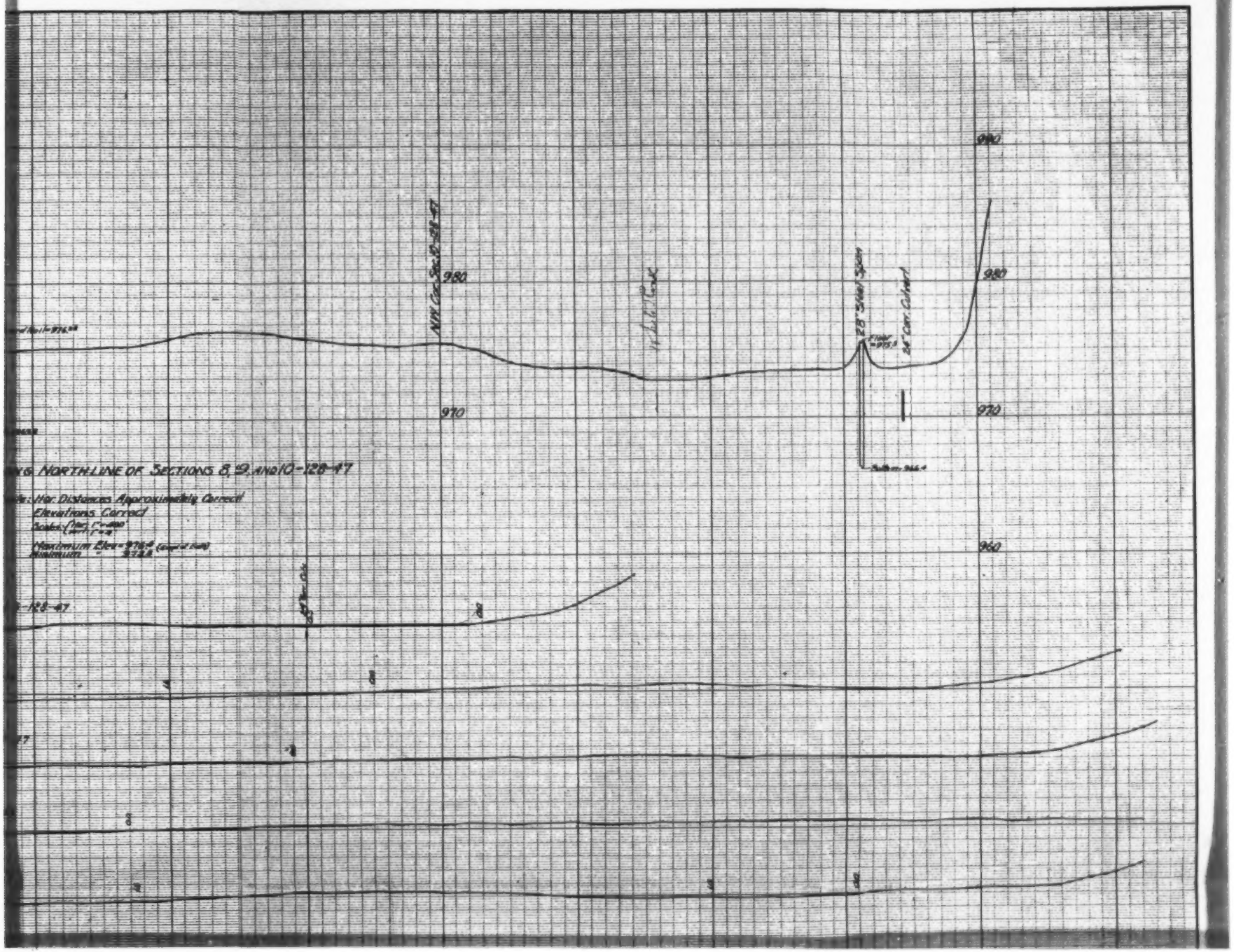


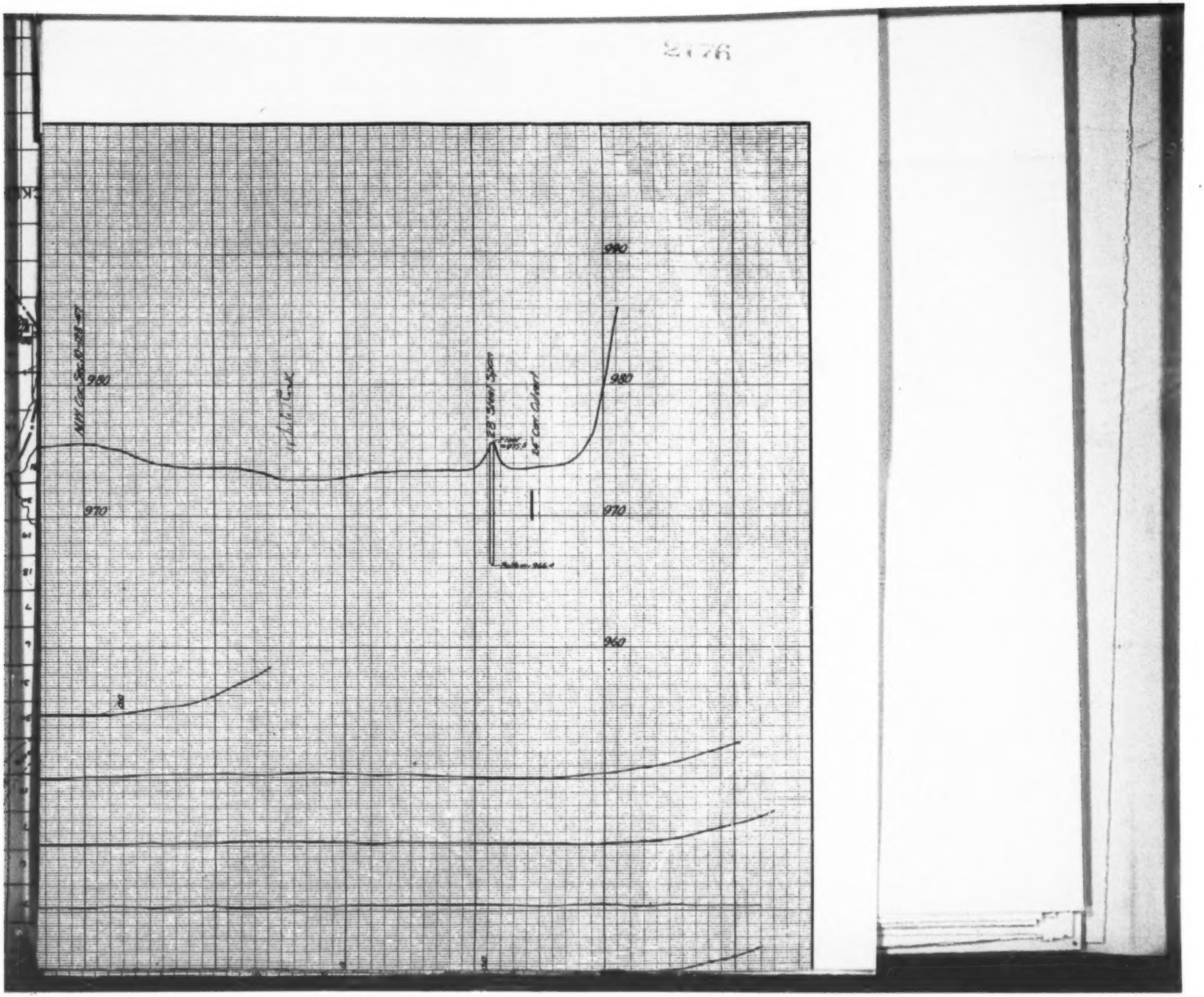
ROFILE OF TOP OF ROAD ALONG NORTH LINE OF SECTIONS 8, 9, AND 10-128-47

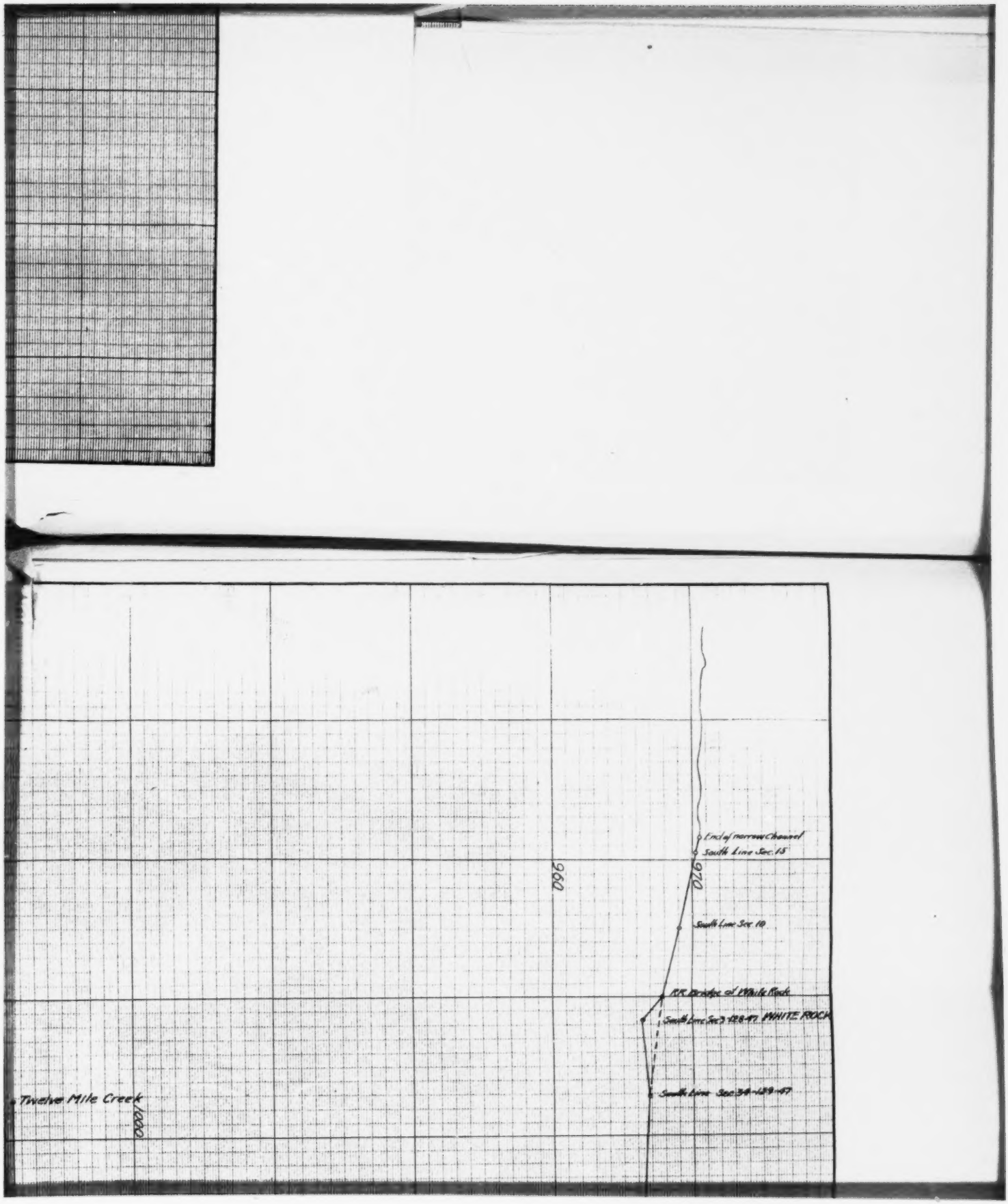
Note: Hor. Distances Approximately Correct
Elevations Correct
Scales: (Hor. 1"=400'
(Vert. 1"=4'
Maximum Elev. = 976.4 (Concrete Bridge)
Minimum " = 972.8

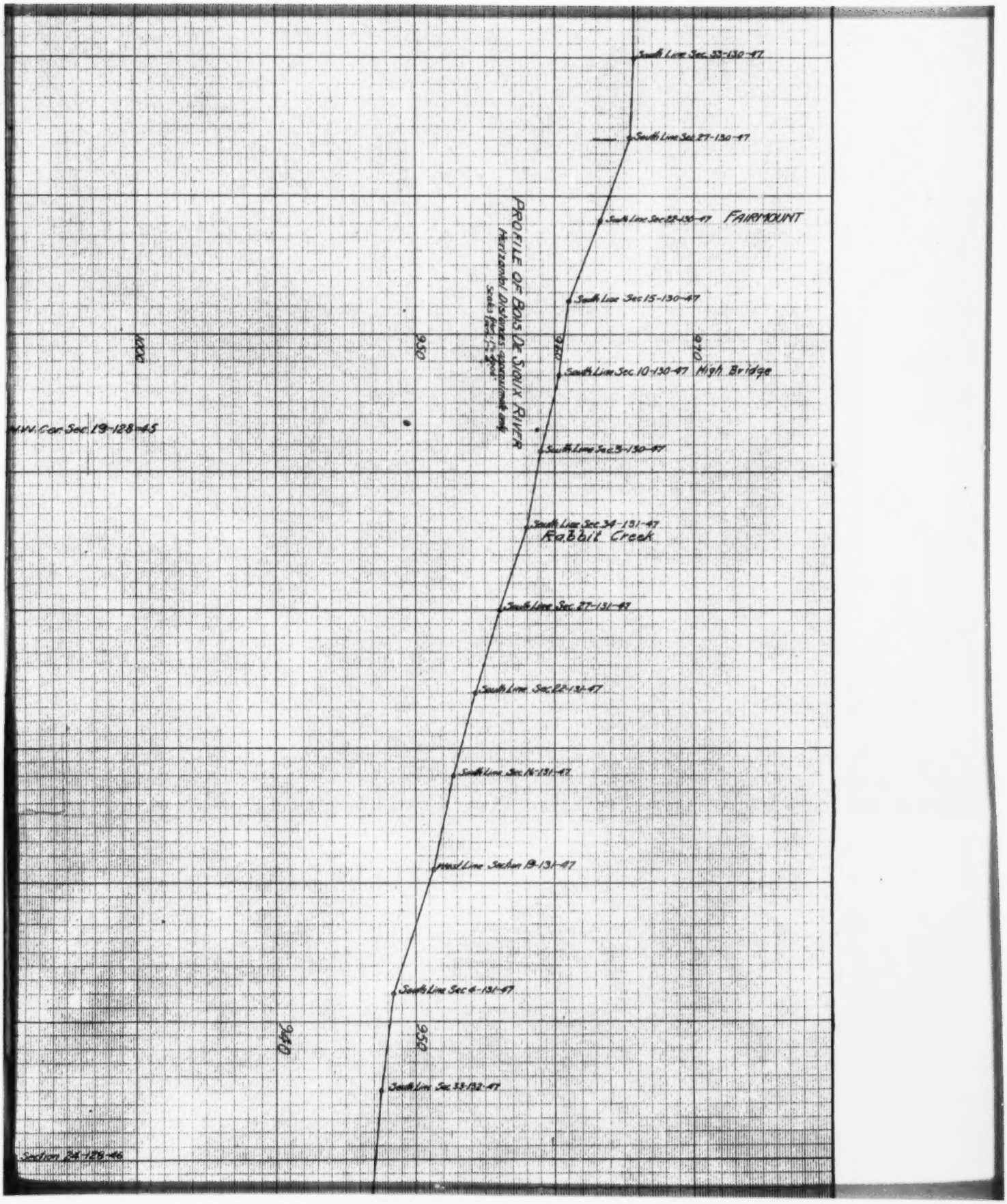
ROXIMATE SECTIONS OF BOIS DES SIOUX RIVER

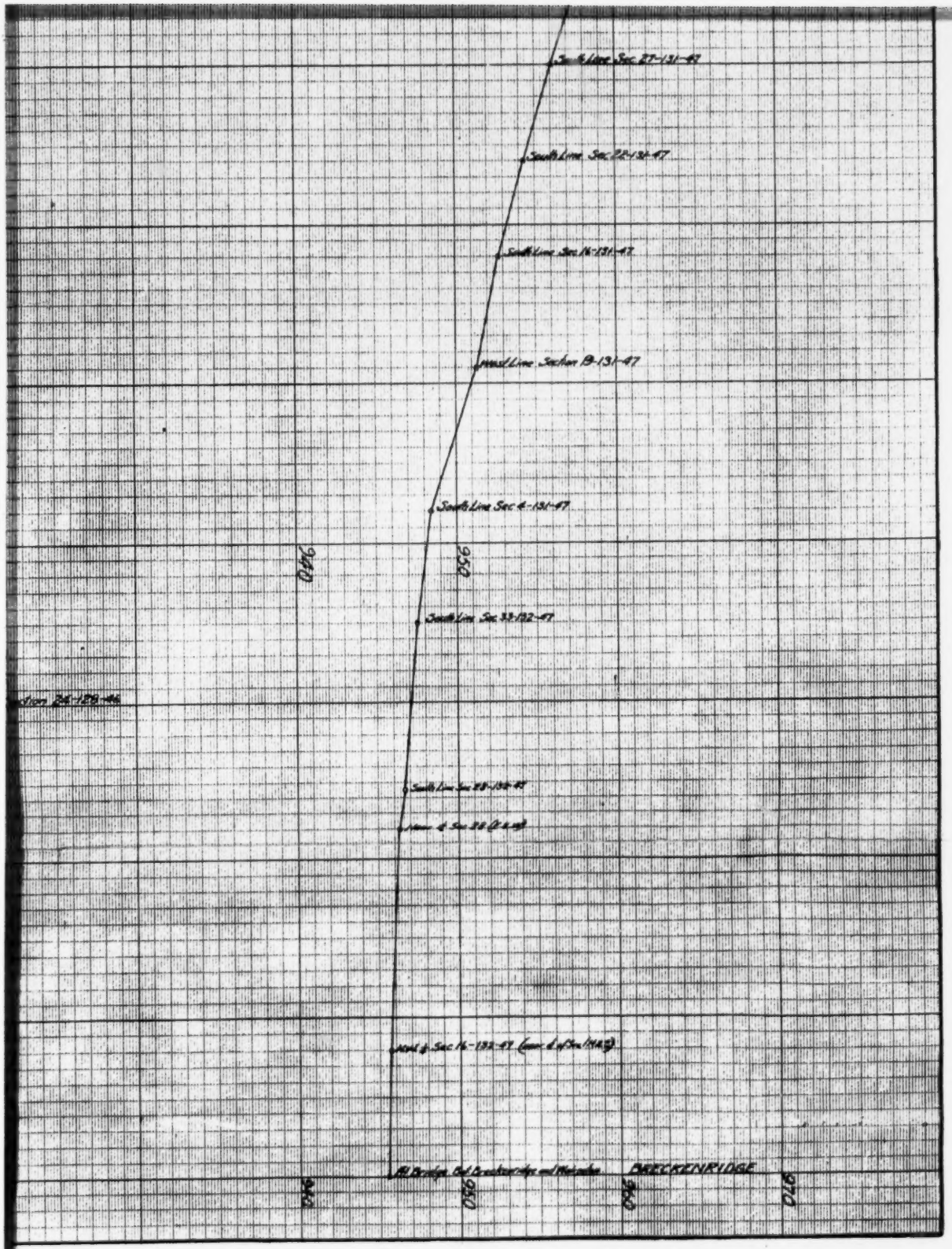
Note: Hor. Distances Approximate
Elevations Taken from Profile Sheet
Scales: (Hor. 1 inch = 40 ft.)
(Vert. 1" = 4 ft.)


980
970
960
28" Stone Sewer
24" Conc. Culvert
NORTH LINE OF SECTIONS 8, 9, AND 10 - 128 - 47

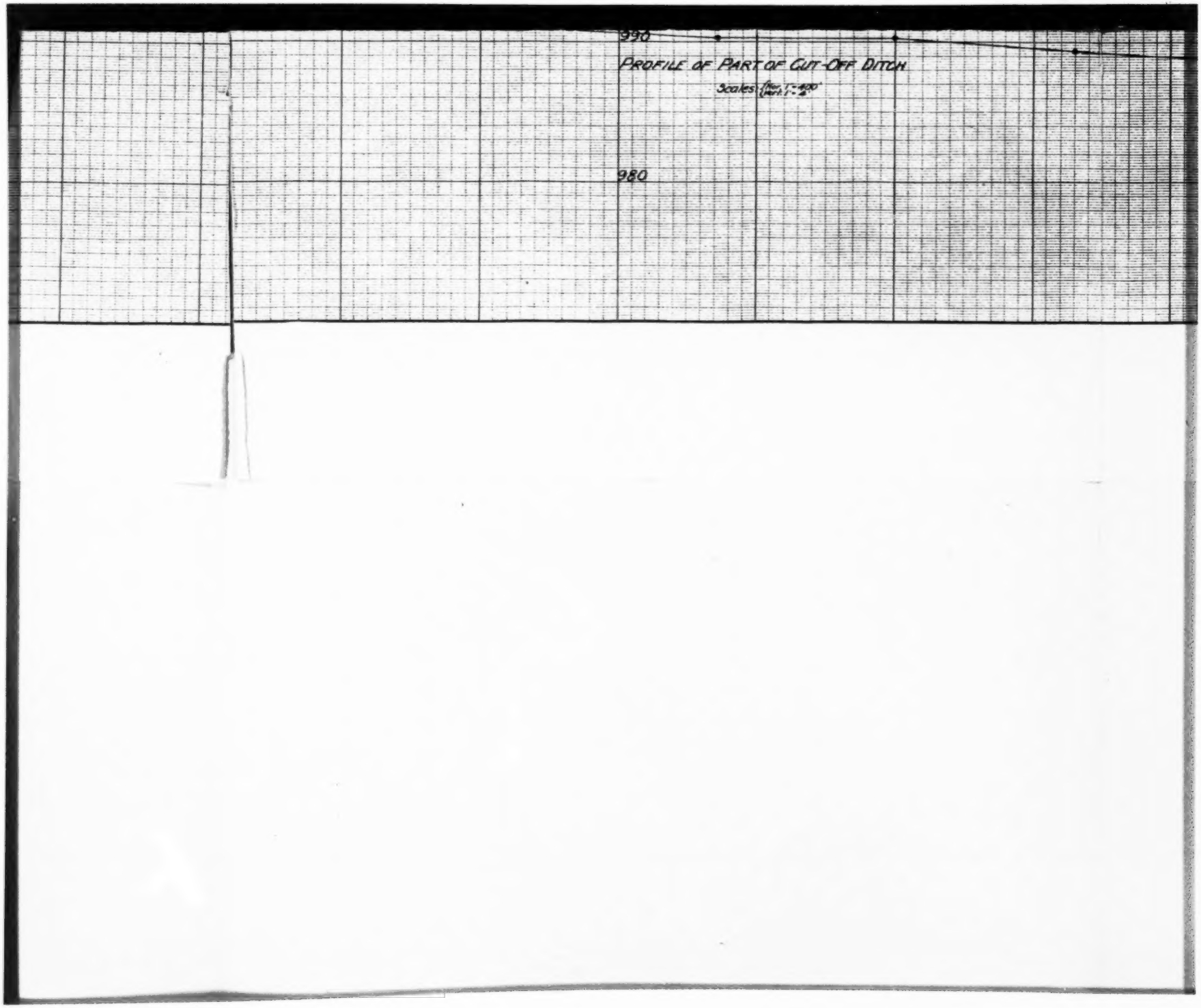

990
980
970
960
28" Steel Sewer
84" Conc. Culvert

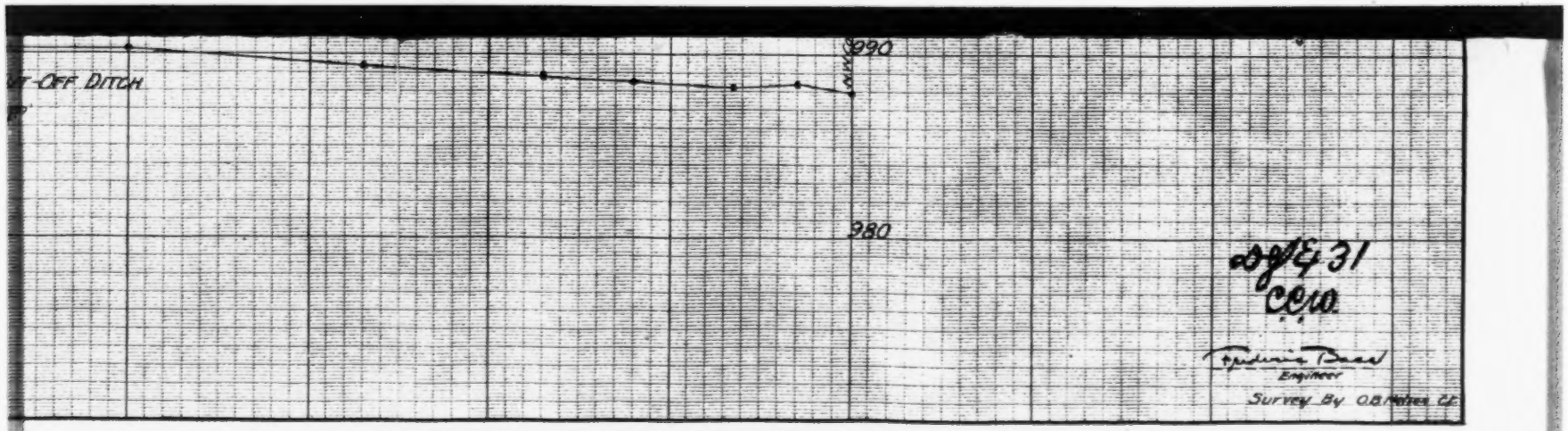

End of narrow Channel
South Line Sec. 15
South Line Sec. 10
RR Bridge at White Rock
South Line Sec 3 128-97 WHITE ROCK
South Line Sec 34-129-97
Twelve Mile Creek
1000
900
800


South Line Sec. 33-130-47
South Line Sec. 27-130-47
South Line Sec. 22-130-47
FAIRMOUNT
South Line Sec 15-130-47
PROFILE OF BOIS DE SIOUX RIVER
Horizontal Distances approximate only
Scale 1 inch = 1 mile
1000
950
900
South Line Sec. 10-130-47
High Bridge
950
N.W. Cor. Sec. 19-128-45
South Line Sec. 3-130-47
South Line Sec. 34-131-47
Rabbit Creek
South Line Sec. 27-131-47
South Line Sec. 22-131-47
South Line Sec. 16-131-47
South Line Section 9-131-47
South Line Sec 4-131-47
950
South Line Sec. 33-132-47
Section 24-128-46


South Line Sec 27-131-47
South Line Sec 22-131-47
South Line Sec 16-131-47
South Line Section 13-131-47
South Line Sec 4-131-47
South Line Sec 33-132-47
South Line Sec 28-132-47
BRECKENRIDGE

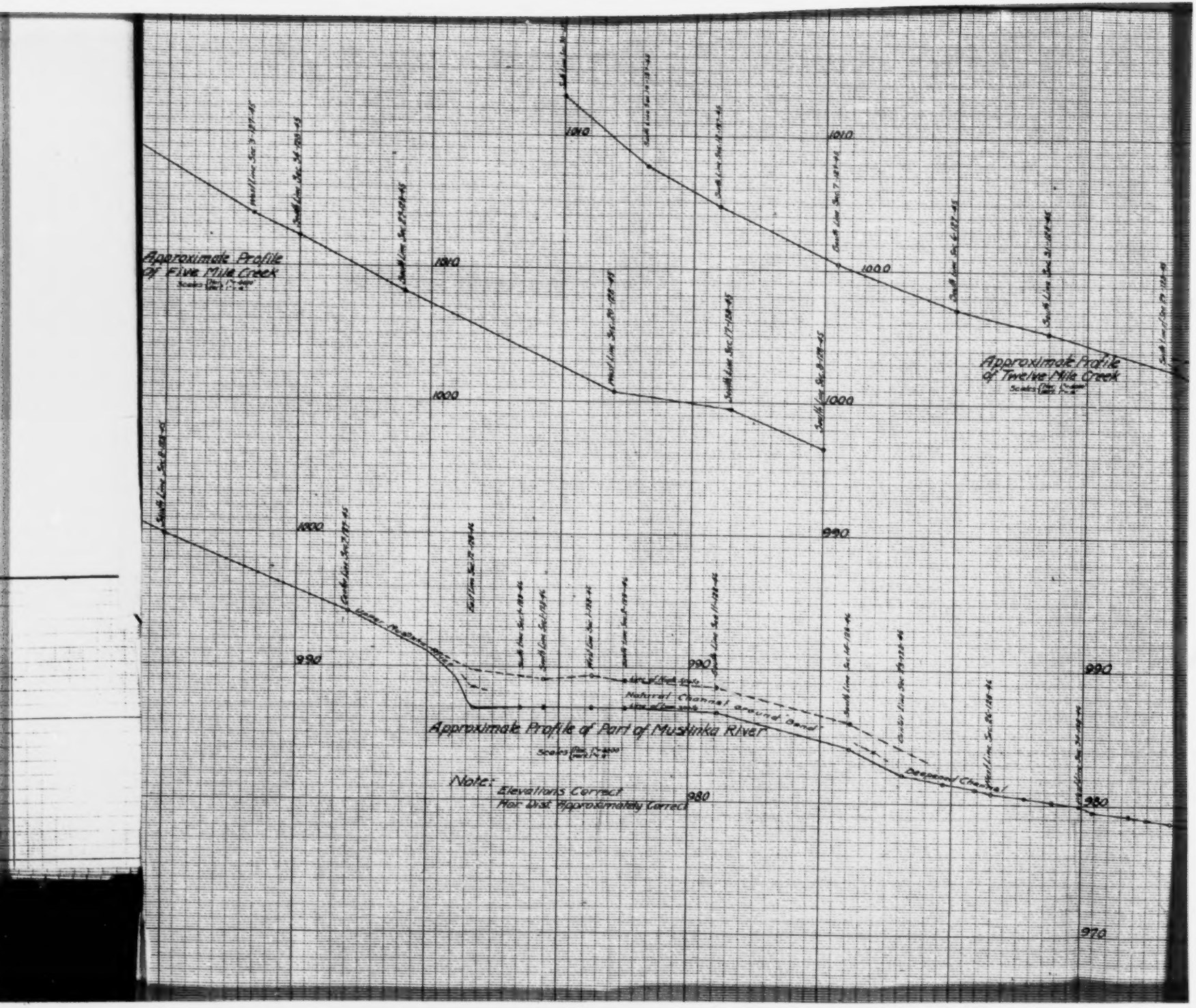
2212

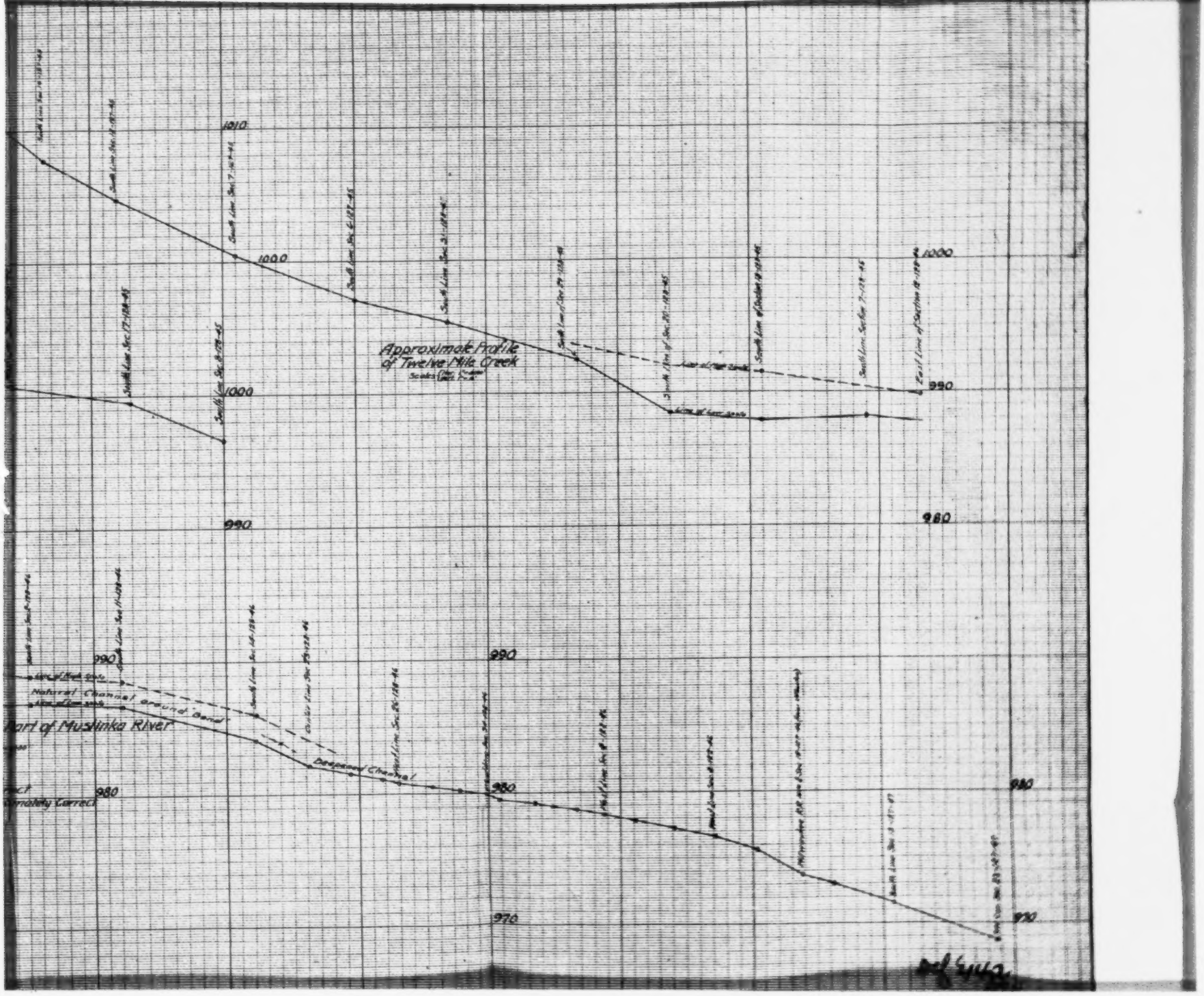

990
980
PROFILE OF PART OF CUT-OFF DITCH
Scales Hor. 1"=400'
Vert. 1"=2'

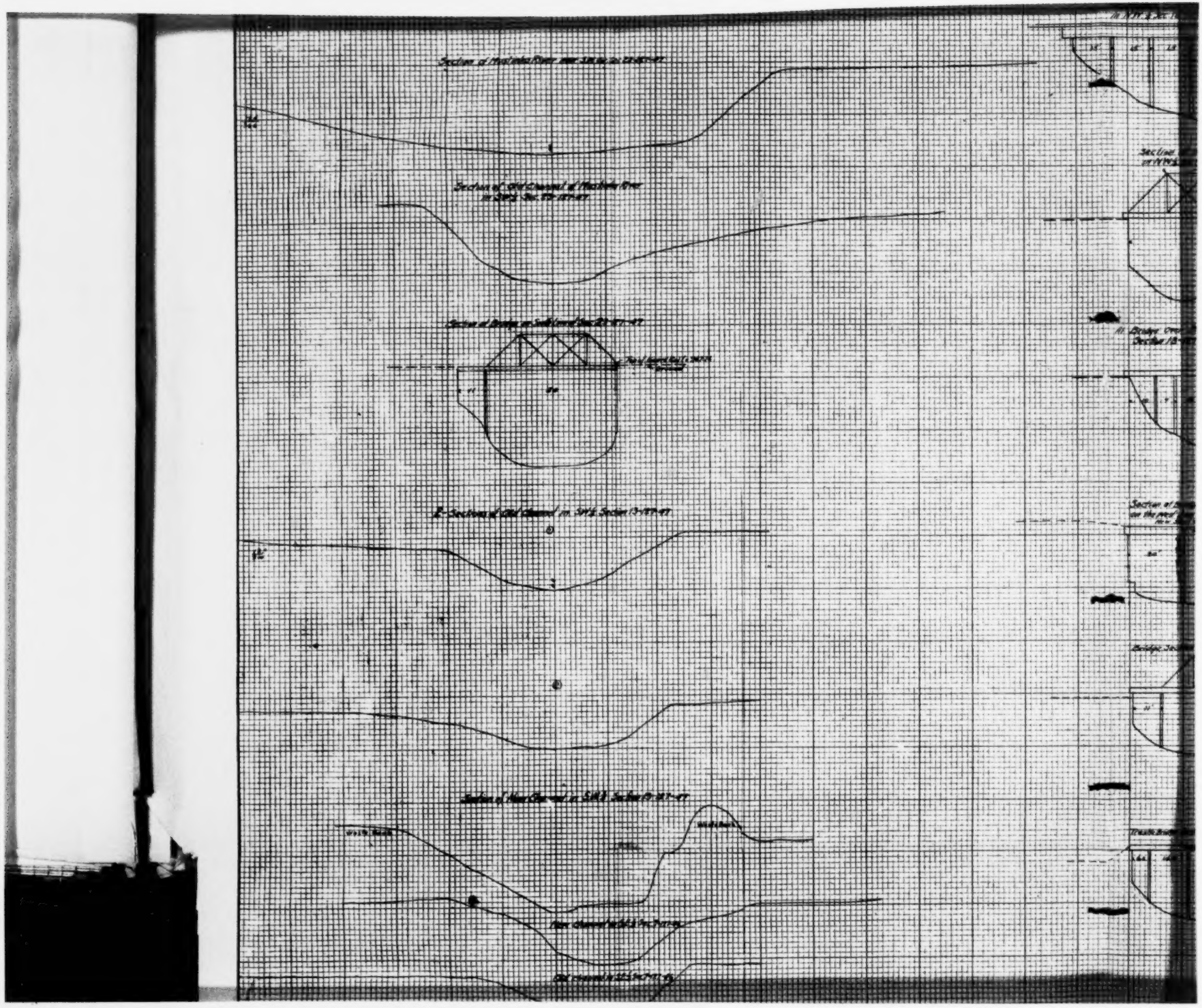

OFF DITCH
290
280
09E31
CC10
Engineer
Survey By O.B. Nobles Co.

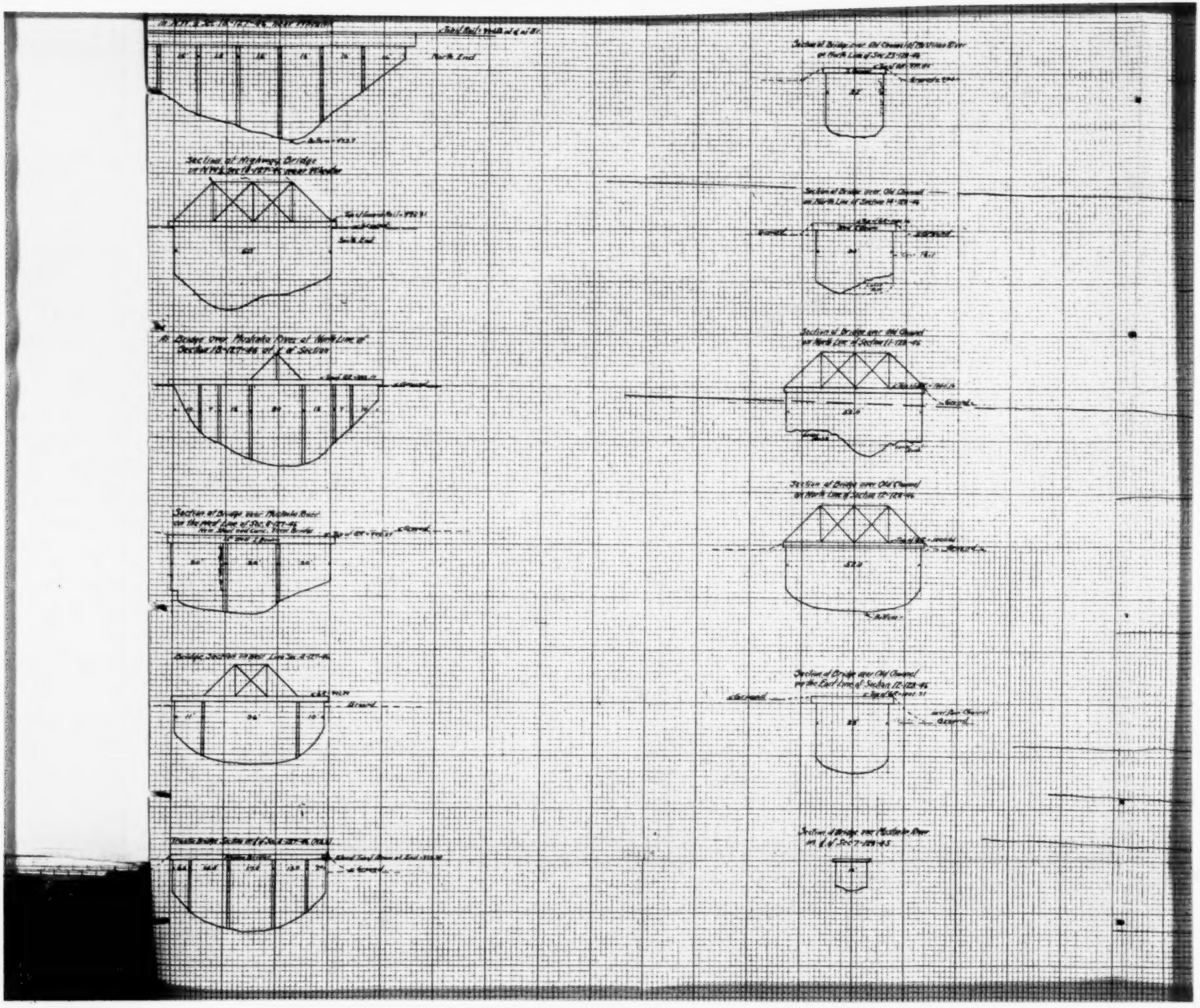
Profile of Cut-off Ditch
and Storage Ditch No 19

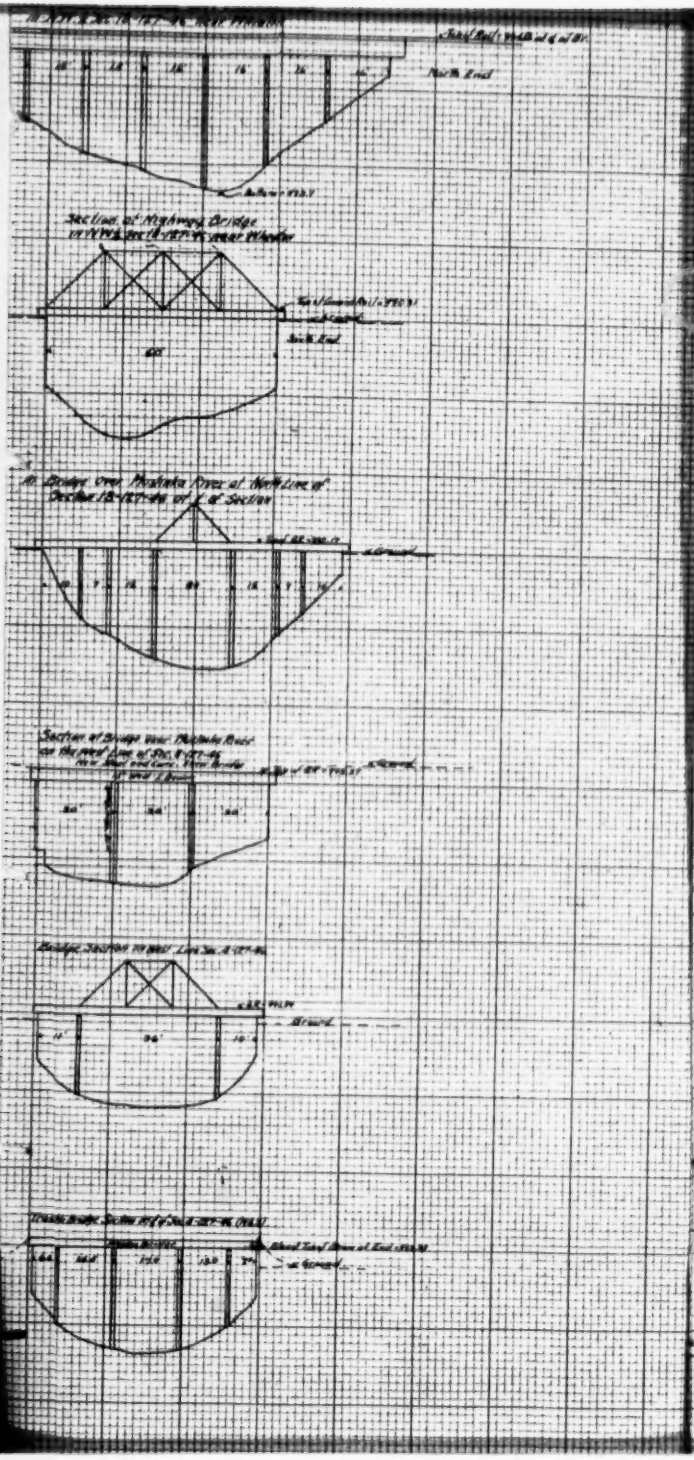
1030
1020
1010
1000
990


Approximate Profile of Five Mile Creek
Approximate Profile of Twelve Mile Creek
Approximate Profile of Part of Muskinka River
Natural Channel
Natural Channel around Island
Dredged Channel
Note: Elevations Correct
Hor. Dist. Approximately Correct
1010
1000
990
980
970


Approximat Profile
of Twelve Mile Creek
1010
1000
990
980
970
Natural Channel
Ground Level
Proposed Channel
Mouth of Muskinka River







Section of Mashinka River 200' N. of N. Line of Sec 23-128-45

North End

Section of Mashinka River 400' North of North Line of Sec 14-128-45

South End

Section of Mashinka River 350' west of West Line of Sec. 1-128-4

South End

Section of Mashinka River 600' E. of W. of Sec. 1-128-46

South End

Section of Mashinka River at South Line of Sec. 1-128-46 (also 2 of 4 of Sec.)

South End

Section of Mashinka River 70' W. of E. of Sec 2-128-45

South End

Section of Mashinka River, near South Line of Sec. 3-128-45

Section of Mashinka River near West of Sec. 29-128-45

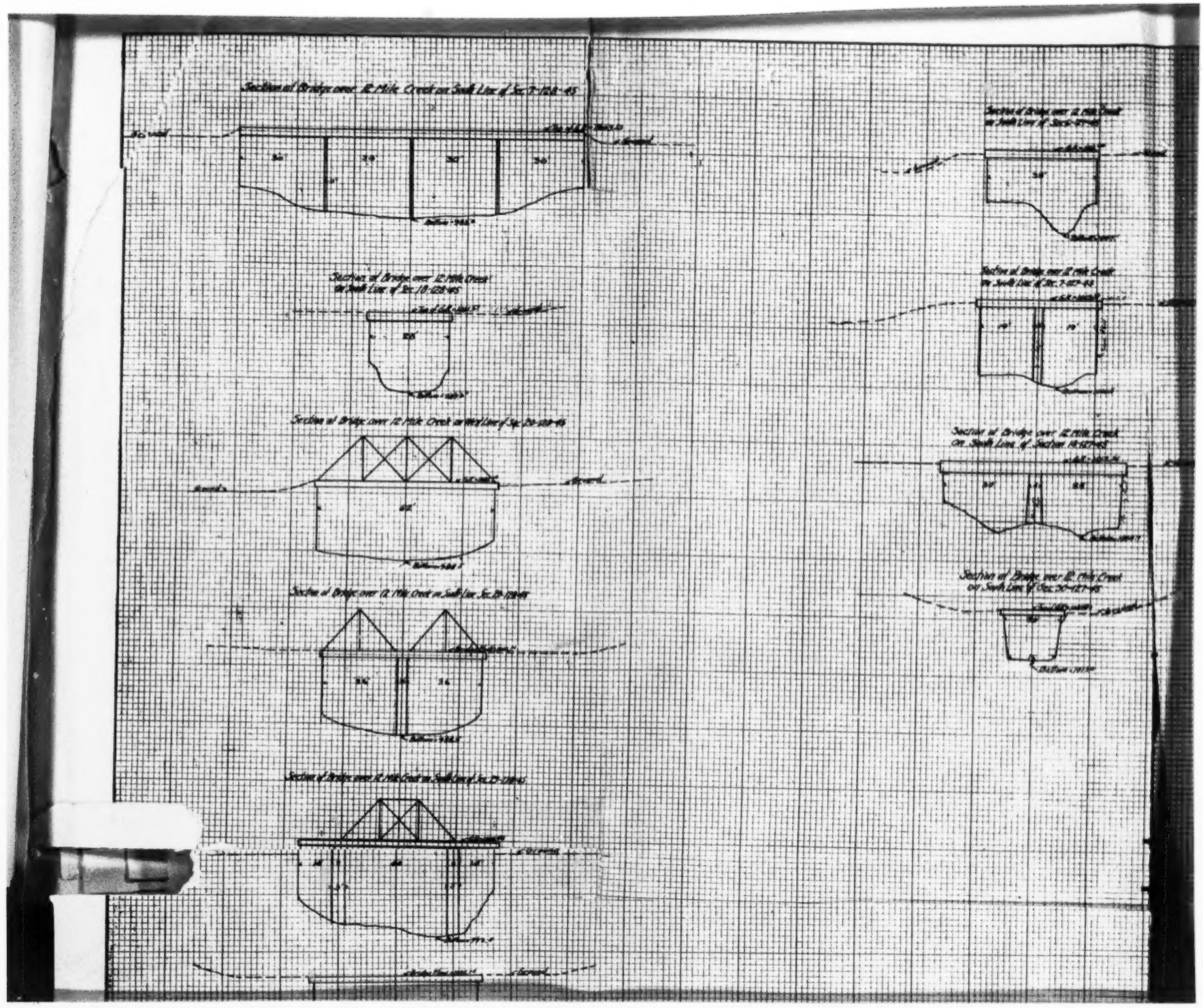
Section of Mashinka River near West Line of Sec 29-129-44

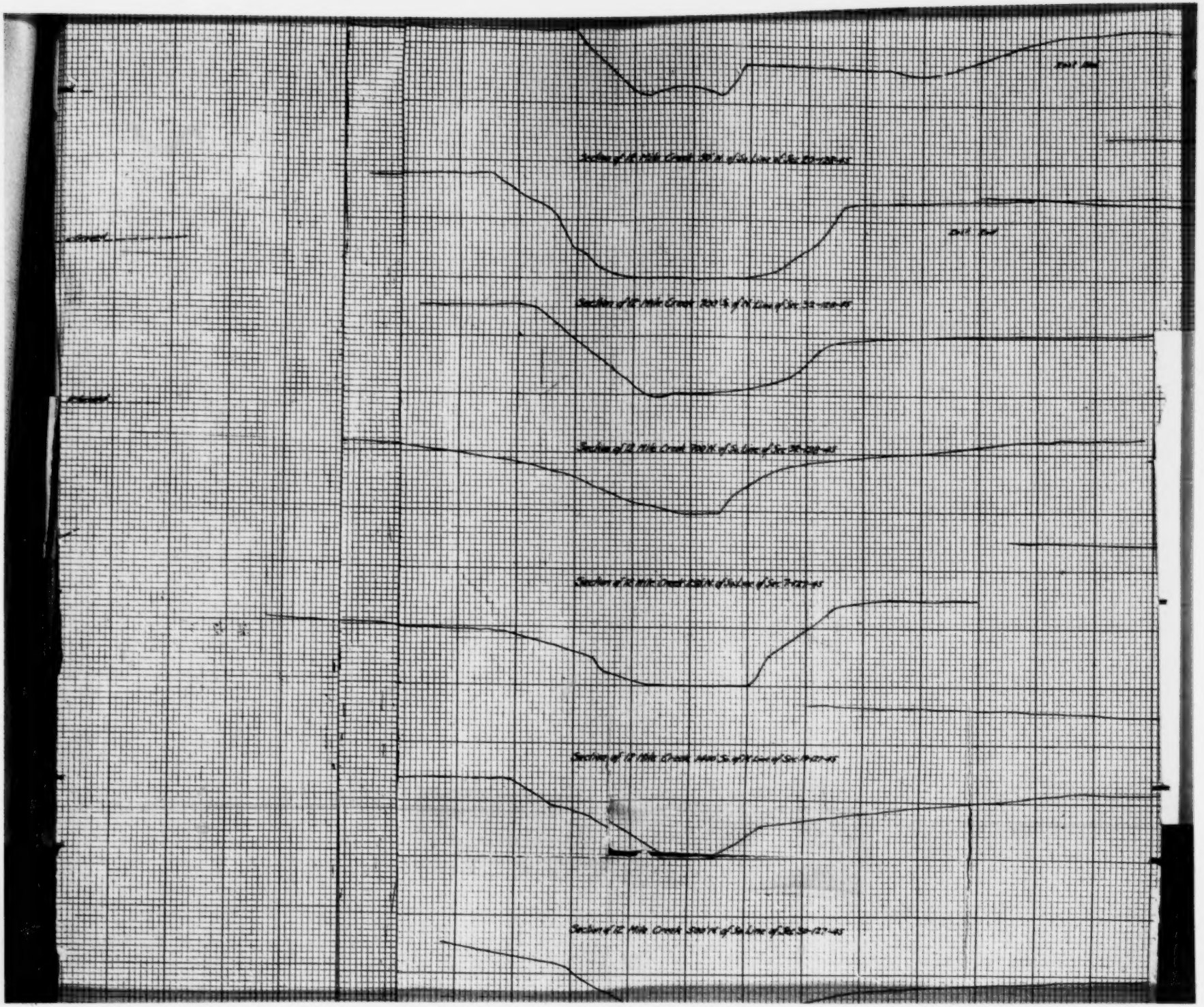
Dg. E.43

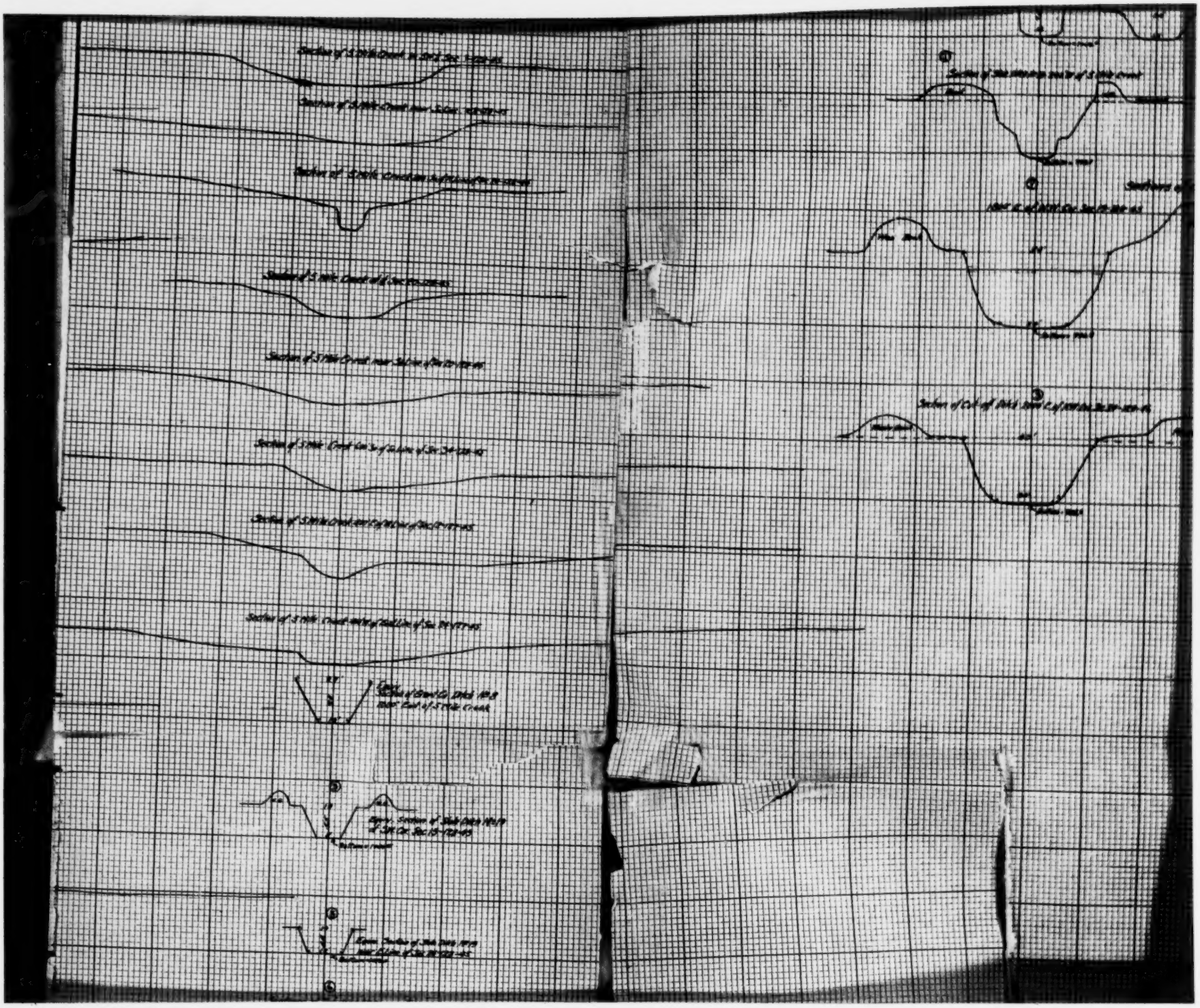
CE Mil

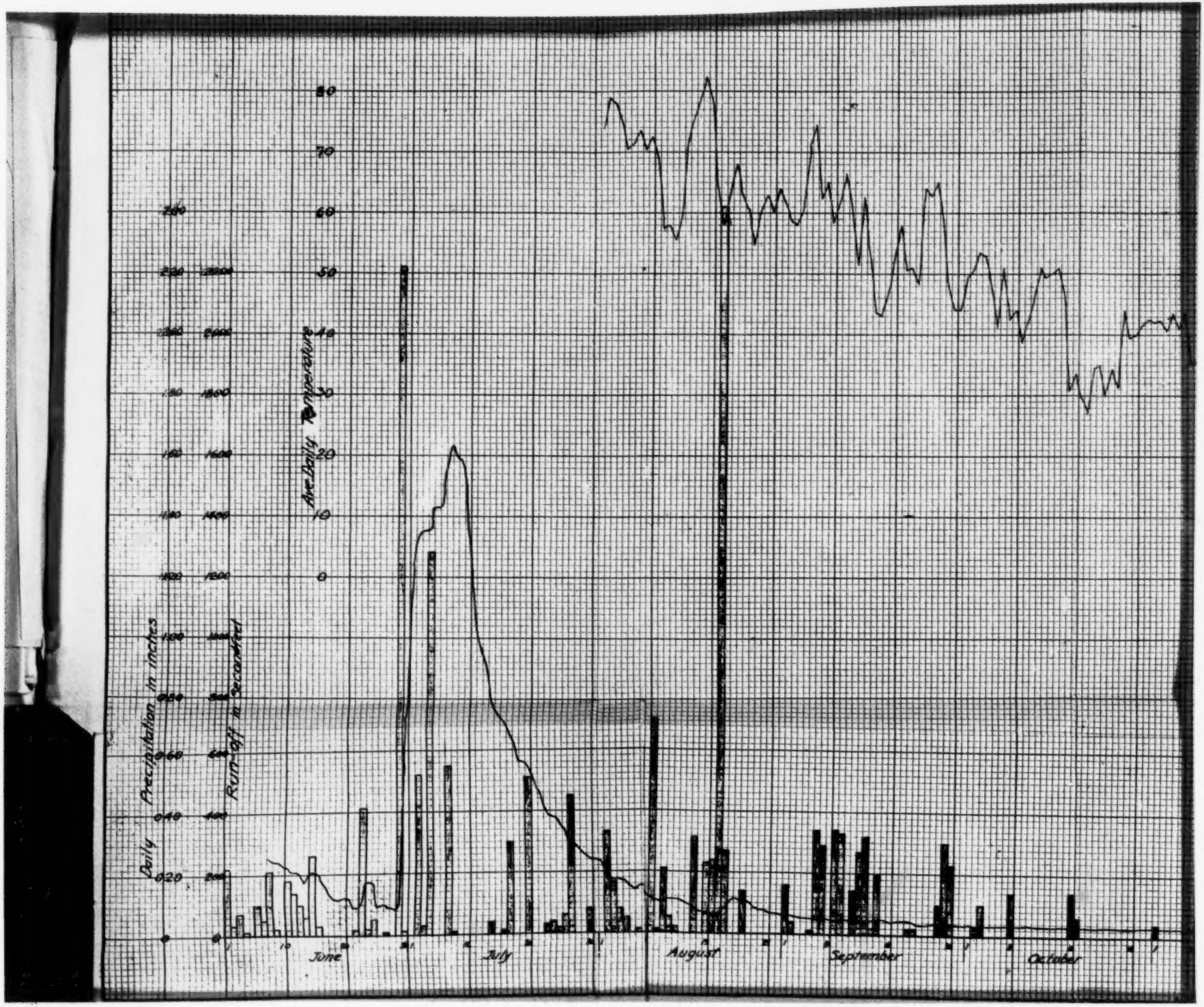
Section of Mashinka River 200' East of East Line of Sec 29-128-44
East of G.N. R.R.

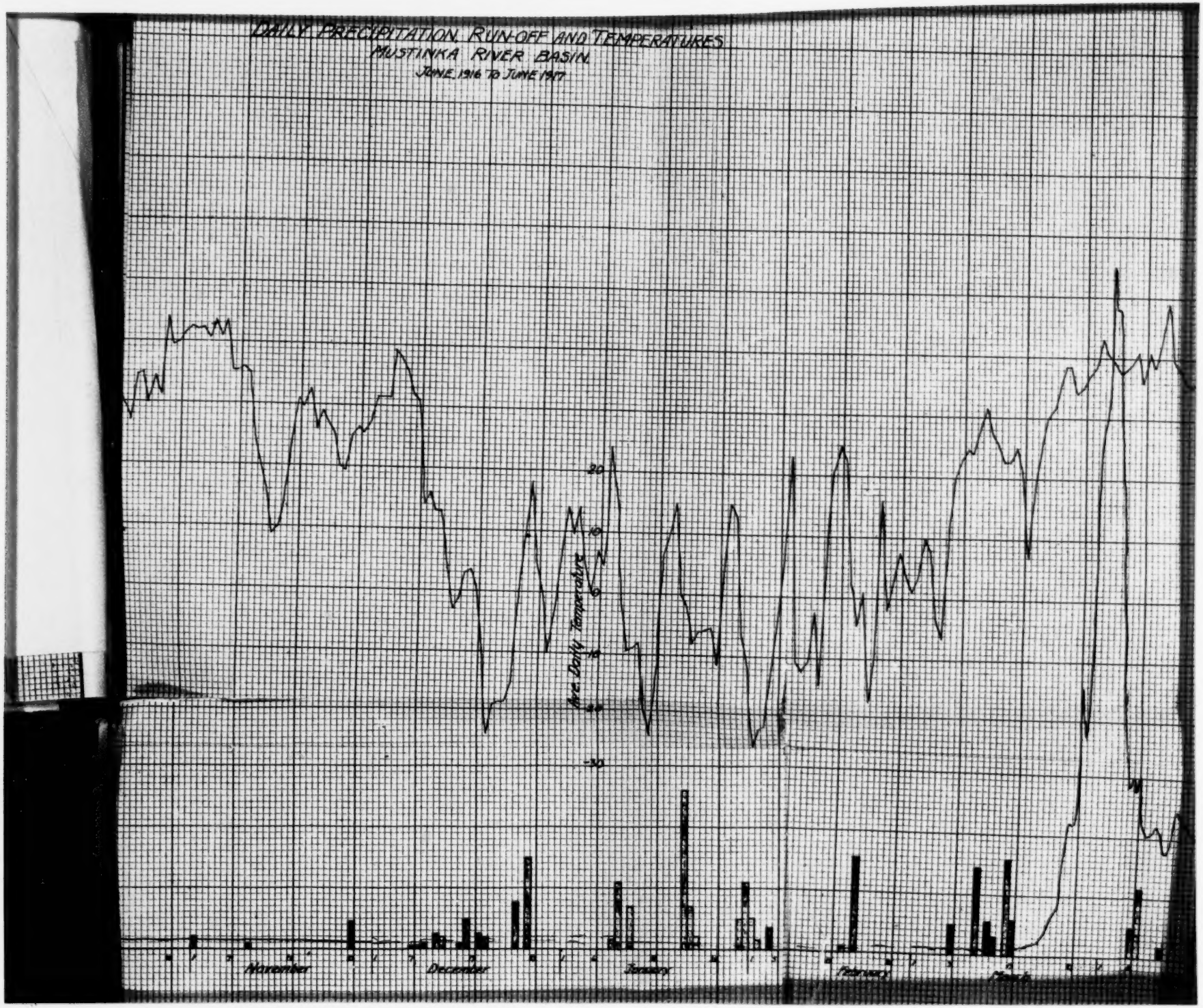
Engineer

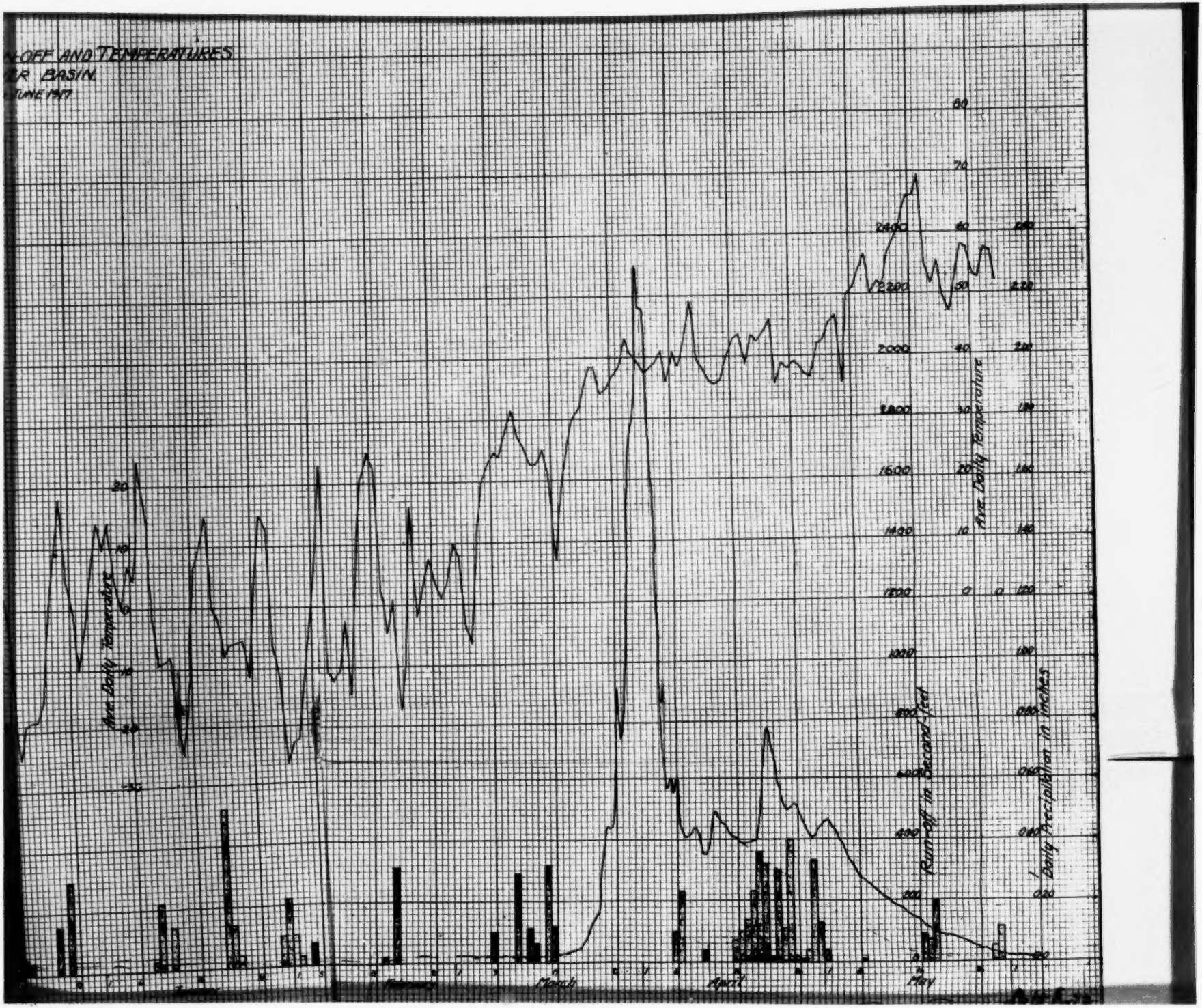


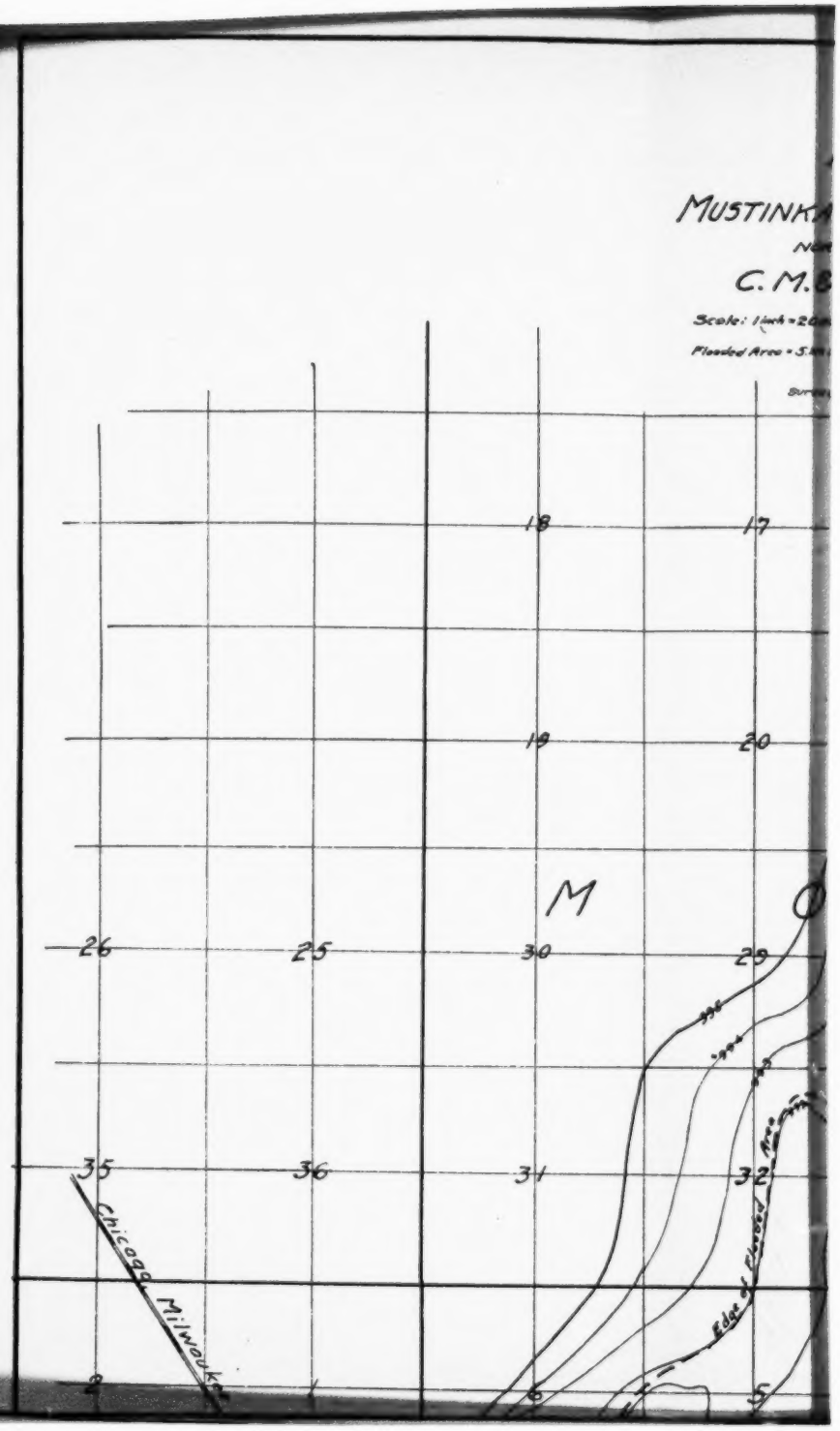





Daily Precipitation in inches
Run-off in second-feet
Ave. Daily Temperature
June
July
August
September
October


DAILY PRECIPITATION, RUN-OFF AND TEMPERATURES
MUSTINKA RIVER BASIN
JUNE 1916 TO JUNE 1917
20
10
0
-10
-20
-30
Mean Daily Temperature
November
December
January
February
March


OFF AND TEMPERATURES
R BASIN
UNE 1917
Ave. Daily Temperature
Run-off in Second-feet
Daily Precipitation in Inches
March
April
May


MUSTINKA
C. M. &
Scale: 1 inch = 2
Flooded Area = 5.
18
17
19
20
M
26
25
30
29
35
36
31
32
Chicago Milwaukee
Edge of Flooded Area

2182

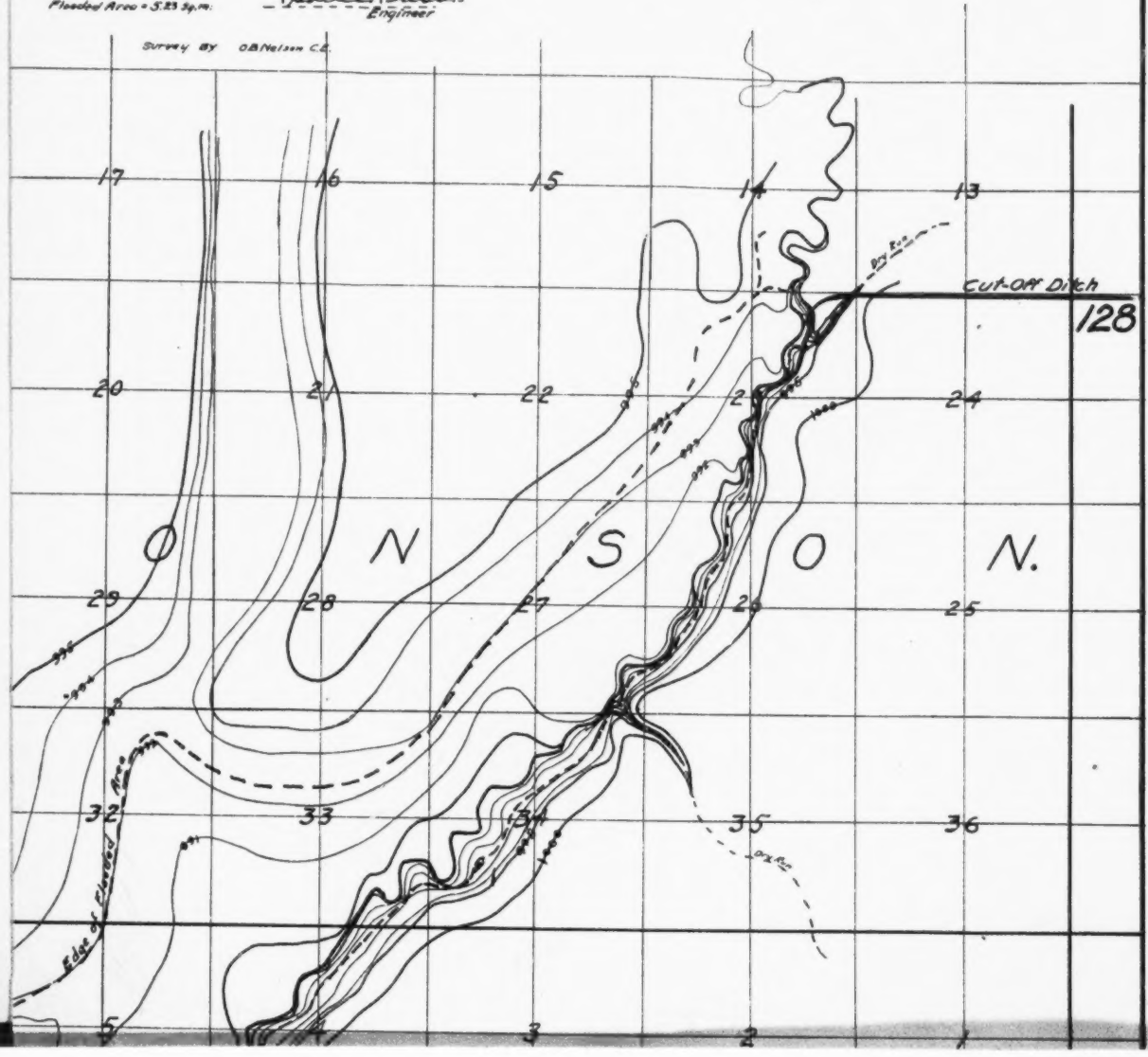
MAP OF
MUSTINKA RIVER FLOODPLAIN
NORTHEAST OF
C. M. & ST. P. RR.

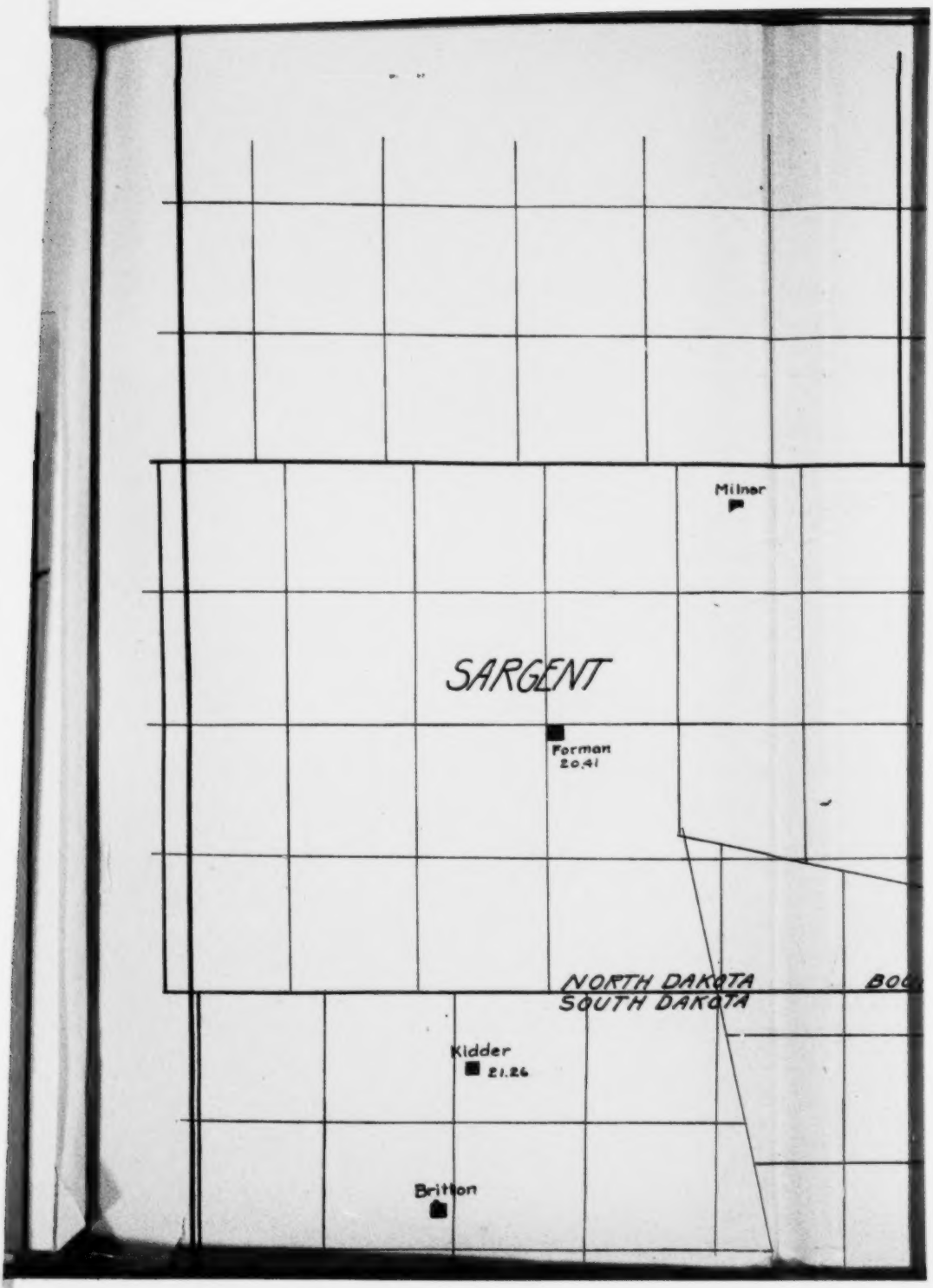
Scale: 1 inch = 2000 Ft.

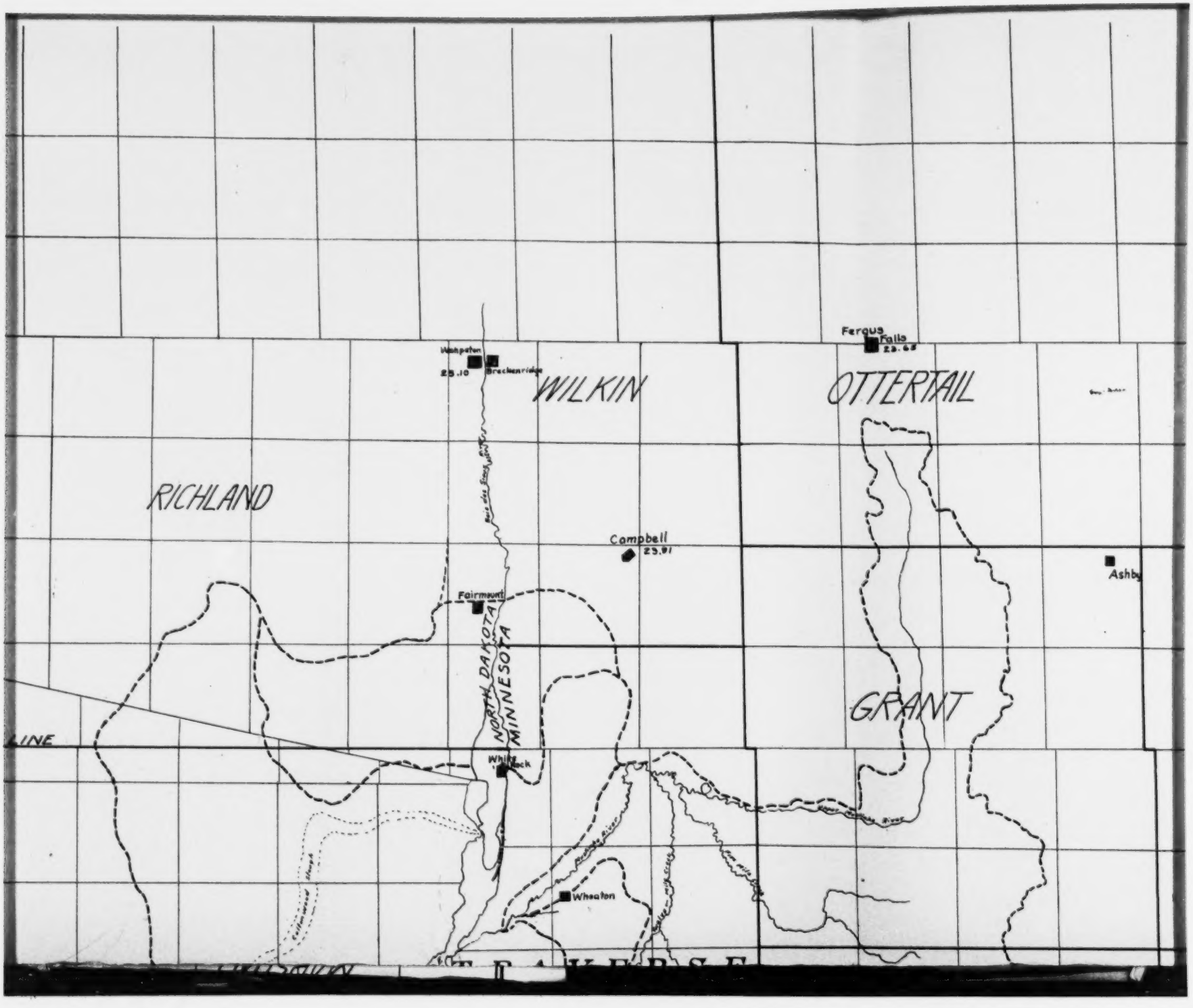
Flooded Area = 5.23 Sq. m.

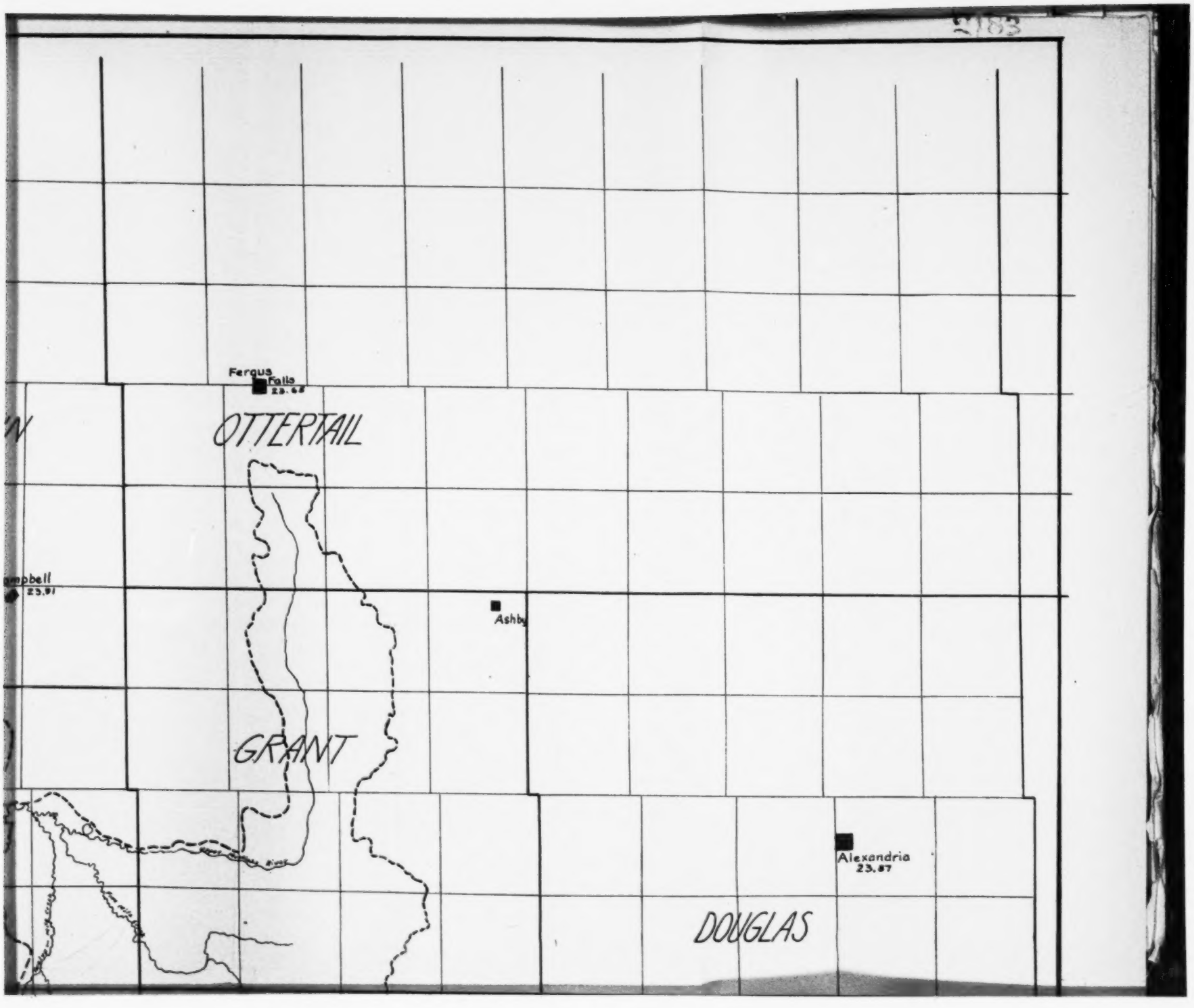
Engineer

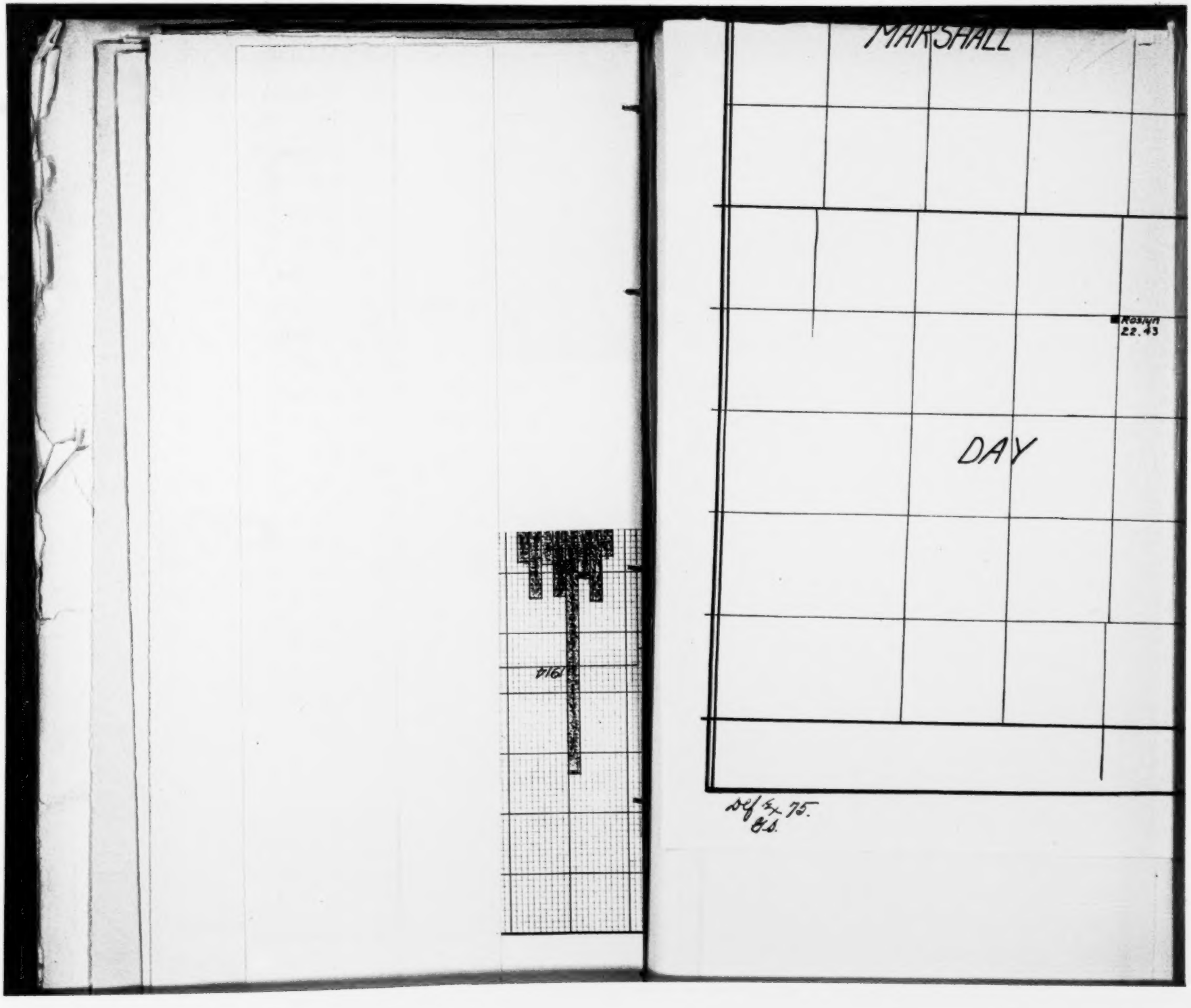
Survey By O.B. Nelson C.E.

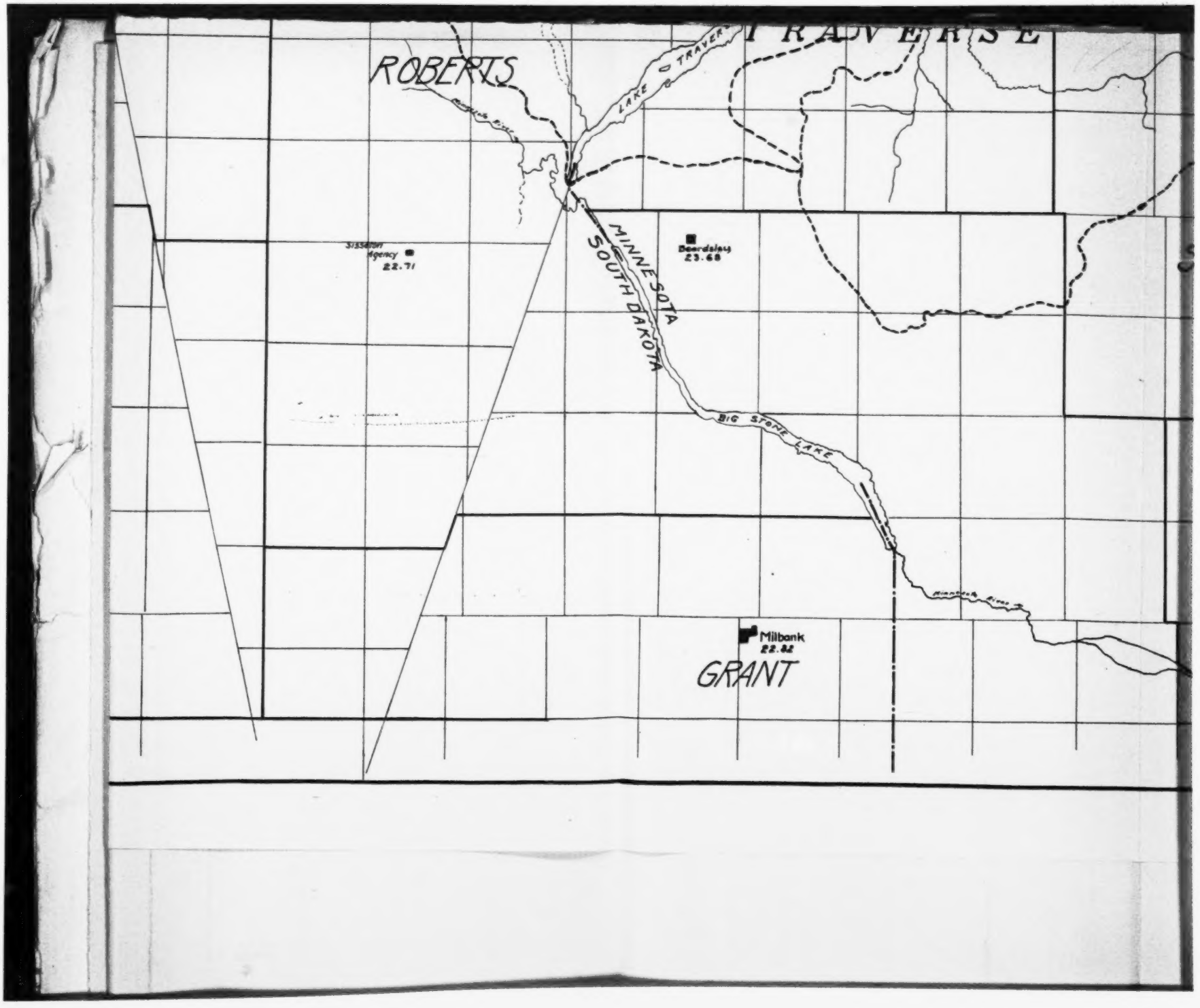


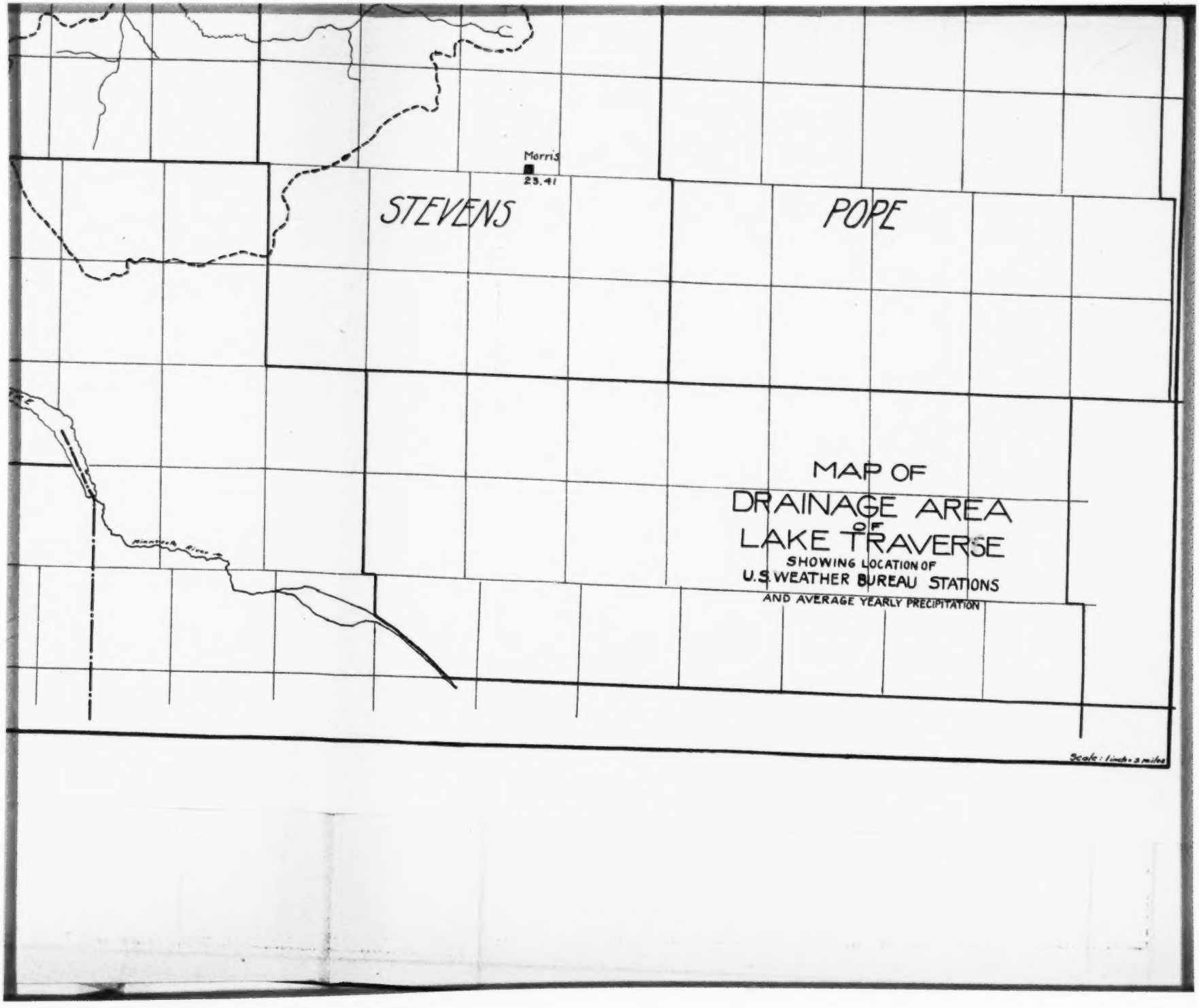

Milnor
SARGENT
Forman
20.41
NORTH DAKOTA
SOUTH DAKOTA
Kidder
21.26
Britton

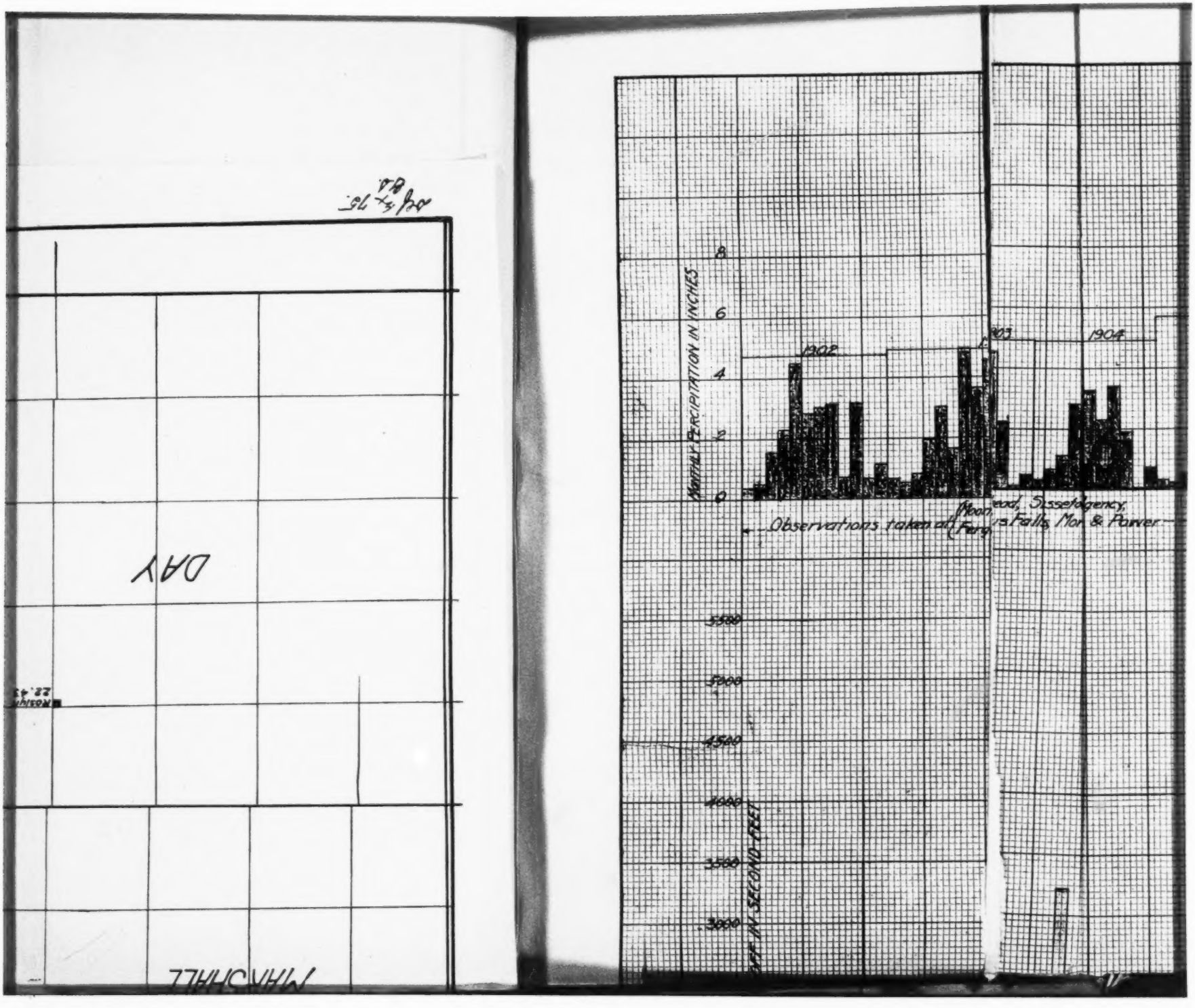

WILKIN
OTTERTAIL
RICHLAND
GRANT
Wahpeton
Breckenridge
Fergus Falls
Campbell
Fairmount
Ashby
Wheaton
NORTH DAKOTA
MINNESOTA
LINE

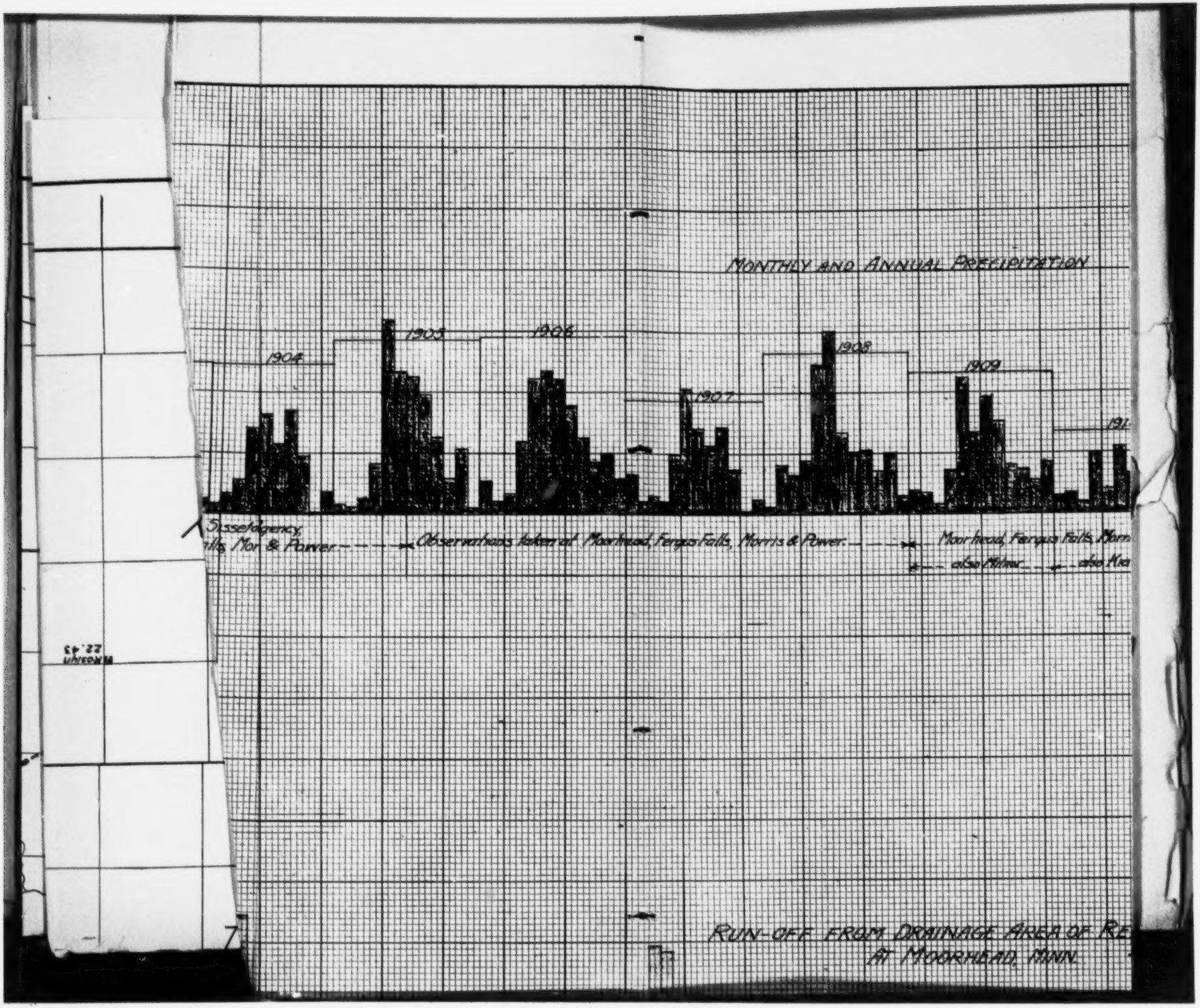

Fergus Falls
23.65
OTTERTAIL
Ashby
GRANT
Alexandria
23.87
DOUGLAS

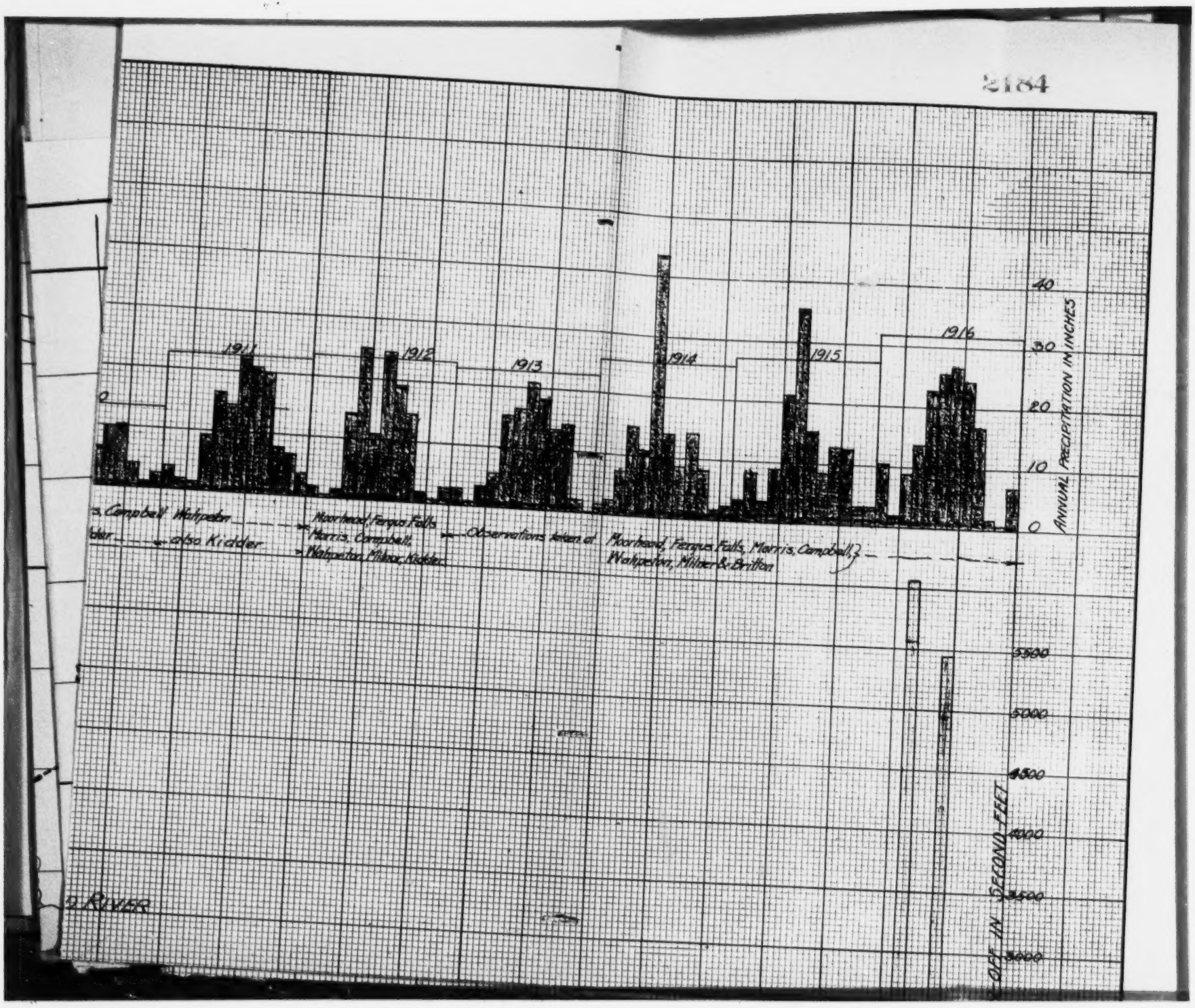

MARSHALL
ROBIN
22.43
DAY
Def 5x 75.
B.S.


ROBERTS
LAKE TRAVERSE
MINNESOTA
SOUTH DAKOTA
Sisseton Agency
22.71
Beardsley
23.68
BIG STONE LAKE
Milbank
22.82
GRANT


Morris
23.41
STEVENS
POPE
MAP OF
DRAINAGE AREA
OF
LAKE TRAVERSE
SHOWING LOCATION OF
U.S. WEATHER BUREAU STATIONS
AND AVERAGE YEARLY PRECIPITATION
Scale: 1 inch = 8 miles


MONTHLY PRECIPITATION IN INCHES
8
6
4
2
0
1902
1903
1904
Observations taken at Fargo, Mandan, Great Falls, Mon. & Pioneer
3500
3000
4500
3500
3000
FEET IN SECOND-FEET


MONTHLY AND ANNUAL PRECIPITATION
1904
1905
1906
1907
1908
1909
Observations taken at Moorhead, Fergus Falls, Morris & Power.
Moorhead, Fergus Falls, Morris
also Wahpeton
also Mor
RUN-OFF FROM DRAINAGE AREA OF RE
AT MOORHEAD, MINN.


1911
1912
1913
1914
1915
1916
0
40
30
20
10
0
ANNUAL PRECIPITATION IN INCHES
3. Campbell Wahpeton
Moorhead, Fergus Falls
Morris, Campbell
Wahpeton, Milnor, Kidder
Observations taken at
Moorhead, Fergus Falls, Morris, Campbell, Wahpeton, Milnor & Britton
also Kidder
5500
5000
4500
4000
3500
3000
DEF IN SECOND FEET
2. RIVER

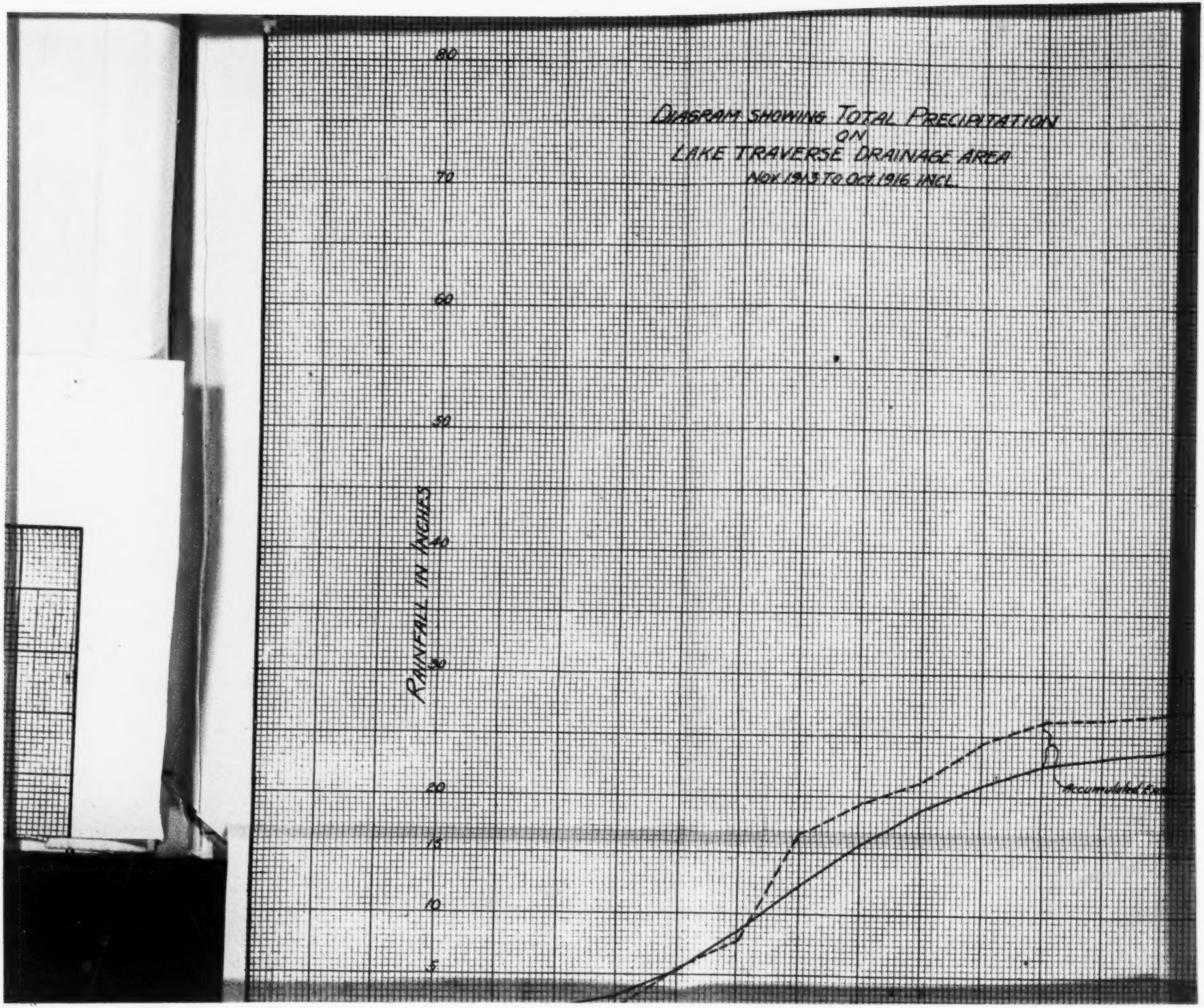
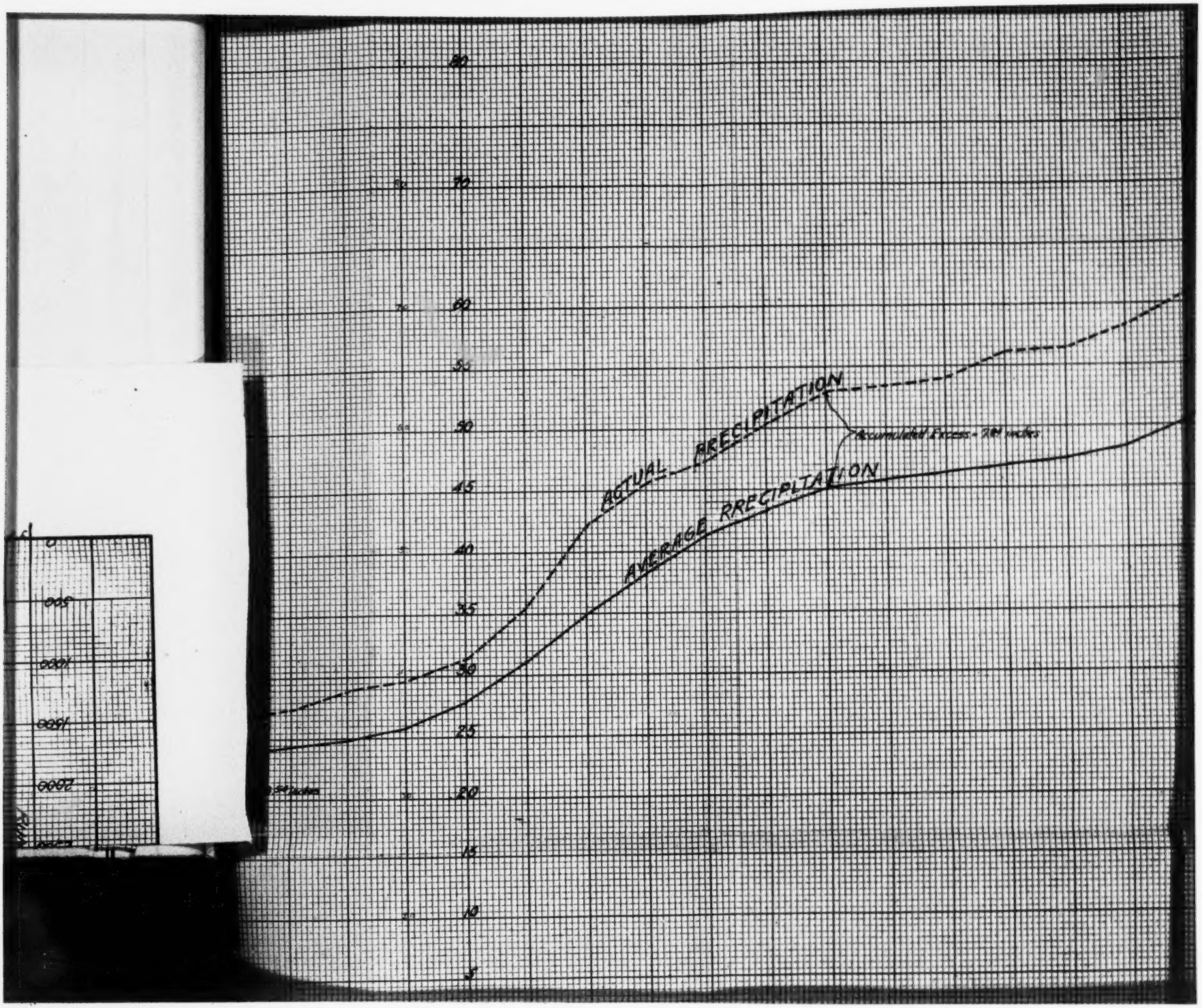
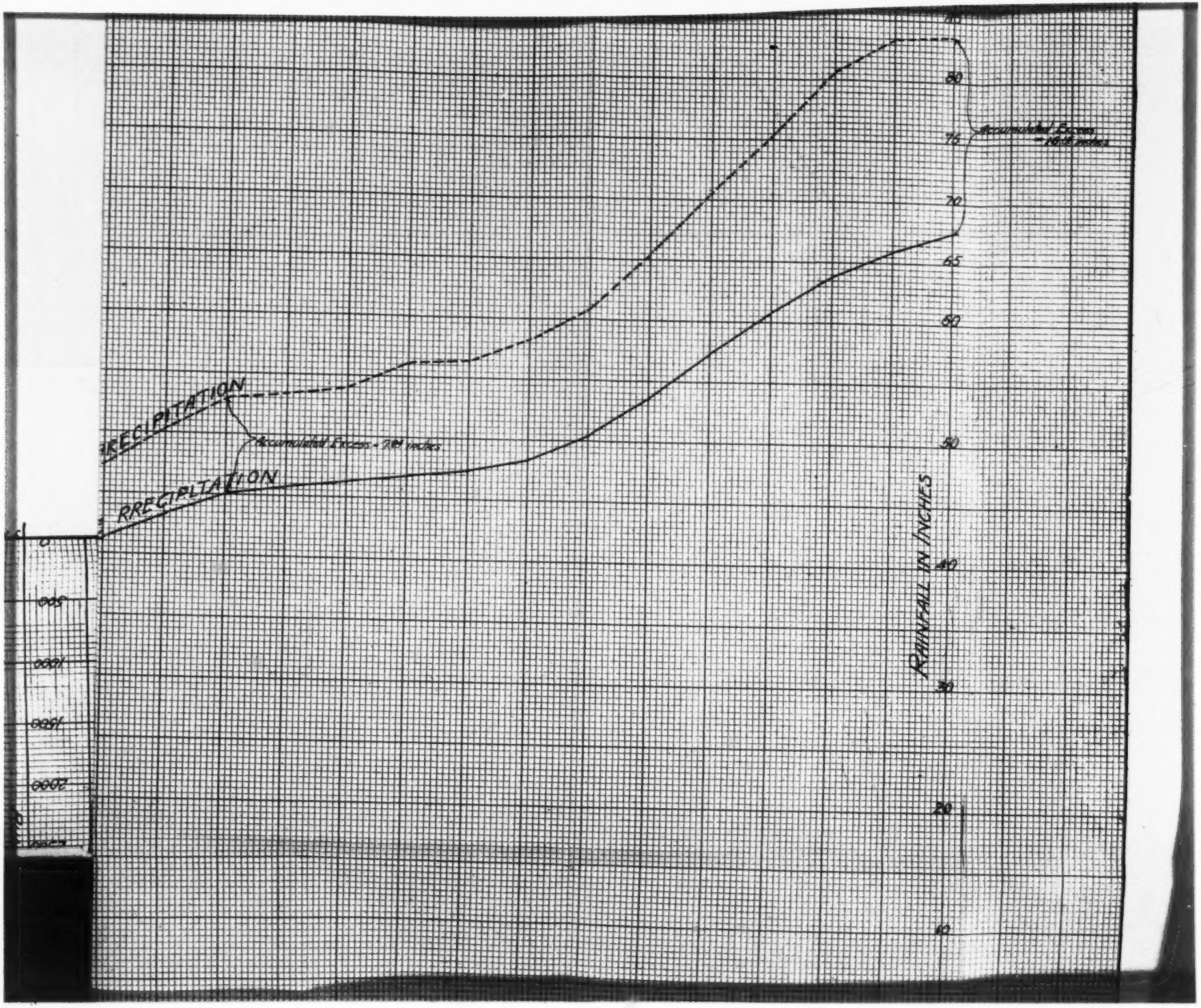
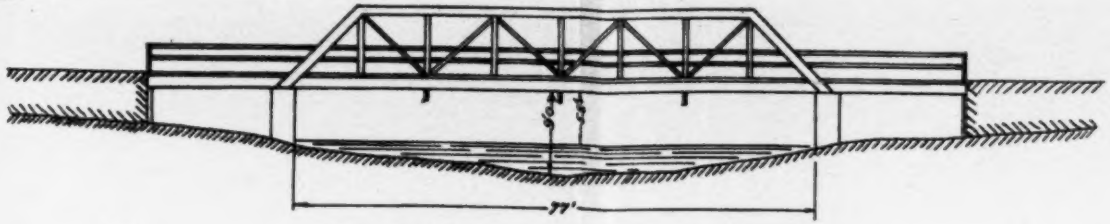


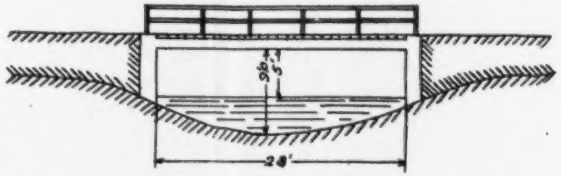
Diagram Showing Total Precipitation
on
Lake Traverse Drainage Area
Nov. 1913 to Oct. 1916 Incl.
Rainfall in Inches
80
70
60
50
40
30
20
15
10
5
Accumulated Ex


ACTUAL PRECIPITATION
AVERAGE PRECIPITATION
Accumulated Excess = 7.84 inches
80
70
60
50
45
40
35
30
25
20
15
10
5


RECIPITATION
Accumulated Excess - 7.01 inches
RRECIPITATION
Accumulated Excess
RAINFALL IN INCHES
80
75
70
65
60
50
40
30
20
0
005
0001
0005
0002

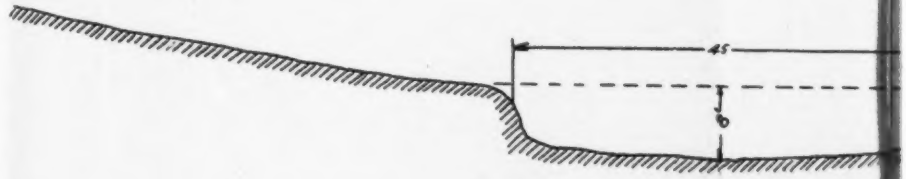


CROSS SECTION OF BOIS DE SIOUX RIVER
ON LINE BETWEEN SECTIONS 10 & 15, T130, R47

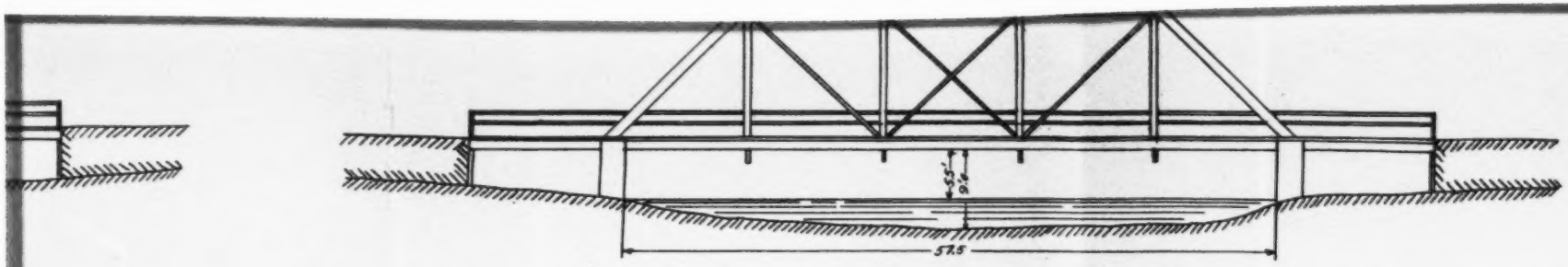


CROSS SECTION OF BOIS DE SIOUX RIVER
ON LINE BETWEEN SECTIONS 3 & 10, T128, R47

CROSS SECTIONS
BOIS DE SIOUX
AND
RABBIT RIVERS
NEAR
WHITE ROCK, S.D.
AND
FAIRMOUNT, N.D.
Scale 1 in. = 10 ft.



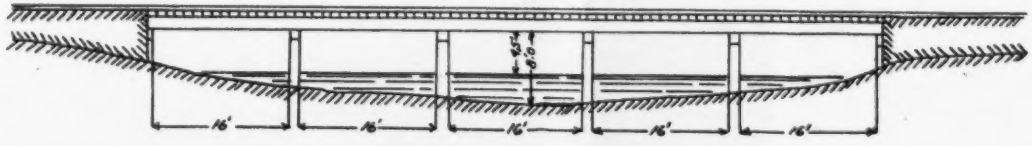
CROSS SECTION OF RABBIT RI
ON LINE BETWEEN SECTIONS 35 & 3



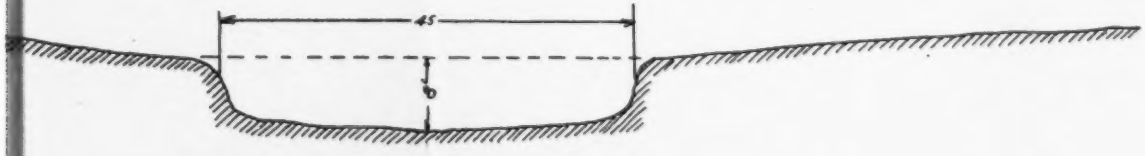
Cross Section of Bois de Sioux River
On Line Between Sections 22 & 27, T 130, R 47

CROSS SECTIONS
BOIS DE SIOUX
AND
RABBIT RIVERS
NEAR
WHITE ROCK, S.D.
AND
FAIRMOUNT, N.D.
Scale 1 in. = 30 ft.

R47



Cross Section of Bois de Sioux River
At Railroad Crossing in Section 10, T 128, R 47



Cross Section of Rabbit River
On Line Between Sections 35 & 36, T 131, R 47

Duplicate Complainants

Exhibit 6

W.B. D

193374

ADDITIONAL RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, [redacted] 1923

No. [redacted]1, ORIGINAL.

10

THE STATE OF NORTH DAKOTA, COMPLAINANT,

vs.

THE STATE OF MINNESOTA.

ADDITIONAL TESTIMONY TAKEN PURSUANT TO ORDER OF APRIL 14, 1924.

CASE FILED NOVEMBER 3, 1924.

ADDITIONAL TESTIMONY FILED NOVEMBER 13, 1924.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1922.

No. 11, ORIGINAL.

THE STATE OF NORTH DAKOTA, COMPLAINANT,

vs.

THE STATE OF MINNESOTA.

ADDITIONAL TESTIMONY TAKEN PURSUANT TO ORDER OF APRIL 18, 1921.

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a Supreme Court of the United States.

No. 12.

THE STATE OF NORTH DAKOTA, Complainant,

vs.

THE STATE OF MINNESOTA.

Before Hon. W. B. Douglas, Commissioner, Saint Paul, Minnesota.

Appearances:

For the Complainant: Sveinbjorn Johnson, Attorney General of North Dakota, and M. H. Boutelle.

For the State of Minnesota: Clifford L. Hilton, Attorney General of Minnesota, and Egbert S. Oakley, Deputy Attorney General, and Montreville J. Brown, Assistant Attorney General of Minnesota.

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2 Pursuant to the order of the Court and stipulation of parties, the taking of testimony was resumed before the Hon. W. B. Douglas, Commissioner, on July 18, 1922, at 10 o'clock A. M., at the Capitol Building in Saint Paul, Minnesota. Sveinbjorn Johnson, Attorney General of North Dakota, and M. H. Boutelle appeared for the Complainant, and Clifford L. Hilton, Attorney General of Minnesota, Egbert S. Oakley, Deputy Attorney General, and Montreville J. Brown, Assistant Attorney General, appeared for the State of Minnesota, and the following proceedings were thereupon had.

F. C. SHENEHON, being duly sworn on behalf of the State of North Dakota, testified as follows, examined by Mr. Boutelle:

Q. Dean Shenehon, you were previously called and testified as a witness in this case?

A. Yes, in 1917 and in January and February, 1918.

Q. Following the original hearings and the argument before the Supreme Court, that court by an order propounded what we may interpret as a series of questions with respect to the possibility or feasibility of flood control in the area in question, which were lettered "*a*," "*b*," etc. Question "*a*" was: "The construction of detaining basins for drainage water throughout the watershed of the Mustinka River for the purpose of withholding a part of the spring waters until the flood period is past." Question "*b*" was: "The construction of a sluice dam at any point in Lake Traverse for the purpose of increasing its capacity as a detaining basin." Question "*c*" was: "Artificial improvement in the channel of

3 the Bois de Sioux River in order to improve its capacity as an outlet for the waters of Lake Traverse in times of flood, so as

to prevent overflow and the inundation of the Bois de Sioux valley, the works to include a sluice dam at the foot of Lake Traverse if necessary in order to maintain its level in times of normal flow." Question "*d*": "Lowering the level of Lake Traverse by means of an outlet to Big Stone Lake, controlled by a sluice dam, with a view to increasing its capacity as a detaining basin during the flood period." Question "*e*": "By diverting some of the drainage water from the so-called Delta Zone, in order to discharge the same down the Mustinka River, to the Rabbit River." I will ask you as to whether or no you have considered the practicability and feasibility of the projects indicated in those several questions?

A. I have.

Q. In your opinion is the first project, or that indicated in the first of the foregoing questions, feasible or practicable,—that is, the construction of detaining basins throughout the watershed area of the Mustinka River?

A. Physically practicable, financially not feasible. It creates a detention basin when Lake Traverse exists already as a basin that will serve the purpose, so far as the excess water coming from ditching is concerned.

Q. And what would be the effect of creating such a detaining basin in the Mustinka watershed with respect to the tributary lands in the State of Minnesota?

4 A. It would be at the sacrifice of good farming land.

Q. To any considerable extent?

A. Yes, I should say so. I have not figured definitely on that, but it appears to be a project that is not called for because already a detention basin exists to which the water naturally flows, as in a state of nature the Mustinka River leads the water to Lake Traverse, and under the conditions in this case the natural water, or the water that ran off in a state of nature, plus the excess, runs into Lake Traverse. That is the receptacle and simply the retaining of that receptacle is sufficient.

Q. Skipping for the moment Questions "*b*" and "*c*," or the second and third questions indicated above, I will ask you whether in your opinion it is feasible to lower the level of Lake Traverse by means of an outlet to Big Stone Lake, controlled by a sluice dam, with a view to increasing its capacity, etc.?

A. I haven't made any study of this proposition, but it appears to me that the Minnesota River valley is sufficiently charged with flood waters at the present time without taking over the burden of the Mustinka River watershed or the whole drainage area tributary to Lake Traverse. I believe also that Big Stone Lake will be sufficiently burdened with the work which would be imposed upon it under the scheme of the State of Minnesota to make of it a better detaining basin. But as I say, these are matters that exist in my mind's impressions rather than the results of any large investigation.

Q. It is a fact, isn't it, Dean Shenehon, that the Big Stone

5 Lake and Minnesota River watersheds have flood problems of their own?

A. Yes, I think so.

Q. And if I understand you correctly, the draining of any part of the flood waters of Lake Traverse by any scheme into Big Stone Lake would merely increase the burden of the latter?

A. It would be my judgment that at the times that you needed to discharge those waters that Big Stone Lake, lying in contiguous territory, might be charged at those very times with its own burden.

Q. Calling your attention to the Question "*e*," the fifth question as to whether or no it is feasible to divert the flow waters in this Mustinka watershed area into the Rabbit River?

A. That I think is physically possible but I think it is wrong in principle in that it imposes an excess flood burden upon the Red River of the North throughout its whole length; in other words, transferring to the Rabbit River such a phase of a detention basin which we have in Lake Traverse. I am having in mind, in answering any questions, that we are dealing now with the excess flood waters as defined in this case.

Q. Now, calling your attention to Question "*b*," the construction of a sluice dam at any point in Lake Traverse for the purpose of increasing its capacity as a detaining basin; in your opinion is that dam, by itself, a feasible or practicable project?

A. In my judgment the construction of a sluice dam or an embankment dam with sluice control, taken by itself, is not the best solution or most advantageous solution.

6 Q. And will you state briefly why you reached that conclusion?

A. I may say that in this matter I have not gone into the matter of lands flooded which might be involved from other causes. I have taken up particularly the flooded or increased stages of Lake Traverse by the method of creating that additional capacity of detaining basin on the top rather than at the lower level.

Q. Then expressed in practical language what would be the effect of resorting merely to the damming of Lake Traverse at the outlet without anything more?

A. The damming of Lake Traverse at the outlet is a practical method where sluice gates or control forms part of the project, provided it is the financially best solution of the problem. If Minnesota should care to solve her problem in that way it would solve the questions of floods so far as North Dakota is concerned; and when I say floods I mean only the excess water coming from ditching operations as shown in the testimony in this case.

Q. I do not seem to make my question entirely plain, Dean Shenehon. What I am seeking to elicit from you is, what would be the physical result produced by resorting exclusively to the damming of the outlet of Lake Traverse without anything else?

A. Having in mind the use of sluice gates?

Q. Yes.

A. It would carry Lake Traverse above the dam or dyke at a higher level than in a state of nature.

Q. And that, I assume, would result in flooding a very large area in the tributary area?

7 A. Yes, sir, that would be my assumption on that. In passing, if Minnesota was to accept that alternative I think it is entirely physically feasible.

Q. Then, finally, calling your attention to the third question, or "c," which is artificial improvement in the channel of the Bois de Sioux River in order to improve its capacity, etc., with a dam in Lake Traverse and a sluice way through that dam, have you considered whether or no that is a practical or feasible method?

A. I believe the creation by artificial channels of a greater outlet capacity for Lake Traverse is the first step in the best scheme of regulation. I think, in general,—and I have had quite a little to do with the matter of regulation of the Great Lakes,—that the avoidance of high stages is obtained by a greater outlet capacity. I find that so for the Niagara River, that Lake Erie can be maintained more safely at a certain level if we have the outlet capacity increased over that in a state of nature; and it appears to me that the perhaps best method of getting the additional detention basin capacity in Lake Traverse is to take it on the bottom instead of on the top. Where you simply build a dam across the valley and depend upon the natural channel of the Bois de Sioux River to take the water away, as I explained, you are artificially raising the elevation of Lake Traverse. The proposition as I see it is to lower Lake Traverse by artificially deepened channel in the Bois de Sioux River so that in times of flood you will have that 8 margin of capacity which will safeguard Lake Traverse itself against a stage in excess of that which would be obtained in a state of nature.

Q. Now I would like to digress for a moment, Dean Shenehon, to ask you whether the problem which we are here considering in its general aspect is one with which you have had any practical experience?

A. My experience has been on rather larger bodies of water, but I think that the principles which apply are present there as well as here. Some of the intimate details of ditching operations are not familiar to me by practice, but there are simply elementary engineering operations to be followed and I feel qualified to speak of them in working out this scheme.

Q. Will you state briefly and as succinctly as you can something with reference to your practical experience in matters that involve these same principles?

A. Well, I have already spoken of the case of the Great Lakes. The problem there is just a little different. I may say that as consulting engineer for the Sanitary District of Chicago I made very elaborate studies of the regulation of the Great Lakes. When I say that I mean all the Great Lakes except Lake Superior; and the reason for this study is the abstraction of water from the Great Lakes system by the Chicago Drainage Canal. The problem then becomes one of restoration of lake levels due to the lowering that inevitably comes with the abstraction of water through a new, independent outlet. In Lake Erie in particular, although in Lake

Ontario also, I found it desirable to raise the level of the
9 lake to a stage which, under natural conditions of outflow, with no artificial detaining capacity, might endanger the riparian lands along the lake shore, and that very principle that I am speaking of there does enter, that all the additional outlet that you can get permits you to regulate your lake against high or flood stages. Now, in the case of Lake Traverse that regulated outlet permits you to draw the level down to a lower level so as to have a detention basin capacity——

Q. I do not want to get on to Lake Traverse for a moment. I will ask you to go on with this problem of the Great Lakes.

A. The use of regulating works or control works permits you manually to determine how much water you wish at some particular time to let flow from Lake Erie or from Lake Ontario. So all the principles that we have at Lake Traverse, if I can return to that now, appear in the problems of the Great Lakes.

Q. How long have you been engaged in the work that you have referred to, with reference to your investigations of those problems as affecting the Great Lakes?

A. I began work on the Niagara River back in 1898, and the object of very elaborate hydraulic measurements made at the time when I was with the engineering department of the Federal Government had in mind the control of the levels of the Great Lakes. That problem has been very much in my mind in the intervening years.

Q. Now, returning to the particular Lake Traverse area with which we are dealing here, Dean Shenehon, and so that we
10 will understand one another and to what my questions addressed themselves, are the matters to which you have already referred, from your standpoint matters of what we ordinarily term flood control?

A. Yes.

Q. What is the objective point to which you have directed your studies in this case?

A. To caring for the excess water alone which comes down the Mustinka River, so that Lake Traverse itself and the Bois de Sioux River downstream from Lake Traverse and the Red River of the North will have no super-burden.

Q. Then, so that we will be absolutely clear, are the projects to which you have referred, Dean, and with respect to which I shall ask you in more detail later on, aimed at embracing or protecting the entire flood conditions that might arise or merely the excess that you figure or estimate is due to the Minnesota drainage system?

A. No, I have attacked the problem on the theory that the floods which will exist in the Bois de Sioux River after the construction of such works and the floods which exist in Lake Traverse after the construction of such works will be such as obtain in a state of nature, that the excess alone is being taken off.

Q. And by the excess, as I understand, you mean such excess as you assume or consider has been produced as the result of the ditching in Minnesota?

A. That is true.

Q. Have you prepared any designs or engineering data
11 with respect to the details of the improvement which you consider feasible and practicable?

A. I laid down what I regard as the main lines in a general way of the dimensions of the various works which will accomplish the result aimed at.

Q. Now, in preparing such data as you have prepared and as we shall introduce here, I will ask you to state whether you have employed any of the government surveys or data?

A. Yes, I utilized certain maps prepared by Mr. Simons in Bulletin No. 1017, United States Department of Agriculture, which is a publication from the Bureau of Public Roads, published in Washington in 1922. The senior engineer is Mr. P. T. Simons.

Q. And will you please, so that we may have the data here, produce if you have them each of the maps.

(Complainant's Exhibit A-1 is marked.)

Q. Calling your attention first to the map, marked Exhibit A-1, is that the map to which you have referred as ostensibly prepared by Mr. P. T. Simons?

A. That is one of them.

Q. And now will you give us the other ones so we will have them all marked?

A. I might say that Exhibit A-1 is that portion from White Rock——

Q. This is just for the purpose of identifying the data.

A. All right.

(Complainant's Exhibits A-2, A-3 and A-4 are marked.)

12 Q. I call your attention to the maps, marked Compainant's Exhibits A-1, A12, A-3 and A-4, and ask you if those are the maps taken from Mr. Simons' report to which you have referred?

A. They are.

Mr. Boutelle: I will offer those maps in evidence.

Mr. Brown: No objection.

The Commissioner: They may be received.

Mr. Boutelle:

Q. I think perhaps, Dean Shenehon, it will save time and clarify the record if, starting with these maps, you explain in your own way the data which you have employed from those, its bearing upon the problem as you conceived it to exist, and then the methods which you have evolved and which in your opinion are practical and feasible for meeting those conditions.

A. These maps have been employed for the purpose of securing distances and directions and also the elevations of ground surfaces of various points, including the bottom of the natural channel of the Bois de Sioux River and of points in Lake Traverse as well. That is the fundamental information that is derived from these maps.

Q. What in your opinion, Dean, is the most feasible and p
method which you have determined for the purpose of pro
we will say, North Dakota, against what you have termed thi
flow?

A. The construction of an earth dam or dyke crossing th
from high ground on the South Dakota side to high ground
Minnesota side.

13 Q. Pardon me, but at relatively what point?

Q. At a point running east and west four miles sou
the east and west road passing through White Rock. This
hibit A-1 is the same location used by Mr. Simons in his pro
flood relief as a whole. I figured that the top of this emba
might be elevation 978, with a top width of 10 feet, slopes o
to one, and where this dyke crosses the channel of the Bois d
River control sluices form part of the project. These are two
with bottom elevation 964, each 10 feet wide, controlled by r
gates. To the eastward of these sluices the dyke, which exten
a short distance, is fixed at elevation 976, and in times of
capacity needed the water may spill over this portion of th
This dam will, I think, for the most part, be placed directly
surface of the ground, with very little [illegible]ping or very little
The elevation of the ground surface [illegible]self running acr
peninsula reaching up between Mud Lake and the Bois d
River has elevations of 975, 973.6, 972.9, 972.7, 972.7, etc.,
ing that the embankment is not of any great height. Wh
natural surface is 975 it will be a three foot fill, and as it is n
templated that the water will often go beyond elevation 9
height of the water against the dam is very inconsiderab
places where it crosses a slough, as at the head of Mud Lak
keying may be necessary of movable muck material.

This dam, as I have it in mind, is about 11,500 feet long,
ing the control works. Leading downstream, or
14 White Rock from the controlling works, a channel
cavated having a bottom width of 12 feet, with slopes
to one, with the bottom elevation at the control works of 9
sloping downstream at the rate of one foot in 20,000. At th
this channel reaches White Rock, a distance of about 22,0
the elevation is substantially 963. Immediately at the contro
the channel width is widened from 12 feet to 25 feet, so as
the width of the two 10 foot sluices and a 5 foot central pier b
those two sluices. Continuing downstream with the same g
the bottom of the ditch has a width of 10 feet, with one
slopes, and continues for a distance of 50,000 feet.

Q. Have you prepared blue-prints of the general plan whi
have outlined with the construction data?

A. Yes, I have prepared two blue-prints, which I have n
Sheets No. 1 and No. 2.

(Complainant's Exhibits A-5 and A-6 are marked.)

Q. Showing you blue-prints, marked Exhibits A-5 and A
those the blue-prints to which you have referred?

A. They are.

Mr. Boutelle: We offer in evidence Complainant's Exhibits A-5 and A-6.

Mr. Brown: No objection.

The Commissioner: They may be received.

Mr. Boutelle:

Q. I will ask you, Dean, to explain, if you will, the matters disclosed on those blue-prints with reference to its bearing on
15 the matters which we are considering.

A. Exhibit A-5, which is Sheet 1 of this set, is entitled: "Project for Remedial Works, Channels Above and Below White Rock, S. D. Shenehon. July, 1922." The two channels illustrated are an 8 foot cut above White Rock, on the upper side of the sheet, and a 6 foot cut downstream from White Rock, on the lower half of the sheet. This channel is intended to follow the line of lowest resistance so far as quantity of excavation is concerned and facility of flow, which means following for the most part the present channel of the Bois de Sioux River. I may say that if it were deemed advisable to do so, so that the channel might all be on the Minnesota side of the line. The Bois de Sioux itself has a channel that forms the boundary line and placing it entirely on the line might mean a little more excavation. The blue-print itself shows a prismatic channel. The actual construction of it would not have the same mathematical outline. It would have the same substantial water area, however, and flood resistance at the bottom and sides.

This sheet shows a berm of 10 feet outside of the top of the channel cut. That means that the spoil or material taken from the channel itself should be deposited well clear of the channel. Those spoil banks are indicated on either side and they should be placed in such a way that the slope would not be over, say, two to one; that is, two feet horizontal to one foot vertical. It is noted here that the spoil banks are not continuous but are on alternate sides. This means that the spoil bank does not form a dyke, but that
16 there are openings for the flow of water on either side towards the old channel of the Bois de Sioux or towards the new channel. The water surface, as illustrated on each of these two drawings, corresponds to 971 White Rock, with the same gradient already noted for the bottom, one foot to 20,000, which is approximately a quarter foot to a mile. The water area indicated for the upper channel is 160 square feet. For convenience for those who wish to check me I will say that the level of the slope is 11.3 feet. In a tabulation at the right of the upper drawing——

Q. You are referring to drawing, Exhibit A-5?

A. I am referring to Exhibit A-5. This tabulation shows the open season capacity of this channel or that portion of it which has passed through an 8 foot cut. The intention there is to differentiate the open season capacity when there is no obstruction from that period, perhaps in January or February, when there will be an

ice cover and the flow capacity must be somewhat less. The tab
tion shows the elevations of the water surface at the control w
and also at White Rock, indicating a little flow drop between
two. Then the volume of flow in cubic second feet as shown in
right column for the elevation at the control works, which is
elevation of Lake Traverse in its lower lobe, 974, shows a flow of
plus. The "plus" there simply means there will be some flow
side of the channel itself, passing through the weeds. That
should be thought of as an element of flow not computed in
channel, but in the computation all water content above
17 tops of the cut was regarded as part of the channel area.
elevation 973 at the controlling works the volume of
is 218 plus, at elevation 972 it is 163 cubic feet per second.
making these computations I have used the natural coefficien
the Kutter formula of 0.030.

In the lower half of the sheet a similar tabulation is shown
the left side, with capacity for water surface elevation at White R
973, of 252 plus, elevation 972, 201 plus, and elevation 971,
plus. In this illustration, as in the upper illustration, the w
surface illustrated corresponds to White Rock 971. Here again
the elevation of water surface indicated there will be some water
side of the channel prism. In other words, the excavation is
the only portion of the water area and the volume of flow indic
is for that portion within the channel prism or vertical abutm
The water area here is indicated as 140 square feet.

Q. Will you make the same general explanation with referenc
Complainant's Exhibit A-6?

A. Complainant's Exhibit A-6 is marked Sheet 2 of this set.
upper drawing is a cross-section of 4-foot fill of cross-valley d
forming the north rim of Lake Traverse detaining basin. I h
already explained the dimensions of this dyke and the notation
the map itself, I think, is sufficient to make it reasonably un
standable. One point that was not explained in my former re
ence was that the ditch which is shown on the down-stream
of the dyke,—this is marked "Equalizing Ditch to Con
18 Mud Lake with the Bois de Sioux River" and is also mar
"Borrow Pit Ditch." It would have a minimum width
4 feet and the bottom would be excavated to 970 or lower.
dyke, as projected, cuts across the head of Mud Lake, where
appears there is some access by small boats, and this equalizing di
will permit the access of small boats just as before and also it
bring the level of Mud Lake down to the level of the ditch be
the regulating works or controlling works. I may explain that
ditch is simply the place where the material is secured in order
build your dyke. You have got to take it from somewhere and
the excavating material can serve some practical purpose to be
cured, that is the place to do it.

I have noted the word "consolidated." That means that
dyke by some method of construction should be solid enough
there would be a large flow into it in times of fairly high lake sta
I have noted there that the dyke itself was grass covered.

ground surface at the point illustrated is about 974 and much of the time there would not be any water against the dyke, where that filler is as much as four feet or where the filler is not over four feet, so it is allowed to become grass-grown. That grass cover will have some value against wave-flow action. So far as necessary some portion of the base or the ground on which it is placed should be turned over and stripped and, if necessary, in other portions there may be a key-way made, so as to connect the solid boulder floor or glacial drift with the dyke itself. That would be a matter of examination as the work proceeds and the chances are, on the greater length of the dyke, that probably some keying would be necessary.

I may say that this dyke differs from our conception of earth dams in one way, that, in time of flood, when much water must be released from Lake Traverse, there will not be any very large difference in level between the two sides, that is, the water on the down-stream and water on the up-stream side. I have in mind that in the flood of 1916 the cross-valley roadway running east and west through White Rock, that some water did flow over the road but the velocities were necessarily slow and I do not have in mind now there was any very serious breaching of the roadway itself.

The lower half of this sheet contains a section of a very simple form of control, which is a concrete structure with two side walls and a central pier. The coping elevation or top of the pier and the side walls is elevation 976. The concrete will be steel-reinforced where this is necessary. I have shown simply the outlines with a view of giving areas rather than any large detail of construction. I have simply gone far enough into the thing to permit me to reach a tentative estimate of cost. The floor slab is three feet thick and at each end, up-stream and down-stream, there is a cut-off wall extending three feet deeper. The floor would be perforated on the down-stream side of the gates, so that on those occasions where there is stress there would be no uplift due to water flowing under the floor.

In my estimates I have used a very simple form of skeleton mitering gate of Washington fir or oak. During times when it is desirable to open or close these gates locks of simple construction are placed or removed, which would leave only the skeleton to operate and the gates could be easily operated. Another form of gate would be a simple stony gate that could be picked up and taken out by derrick or crane. I had in mind that there were times when boats were used on the lake and that that should not be interrupted. In other words, I have endeavored to preserve these little navigation rights that might have existed. If a lock were to be used a very simple lock could be constructed without any large expense.

Q. Then, as I understand you, Dean, in substance your plan contemplates the construction of this dyke and sluice way at a point about four miles above White Rock, with a dredging of the Bois de Sioux channel down-stream or north of that for some ten miles?

A. Yes.

Q. Have you made a rough estimate or computation of the cost of constructing this improvement which you have outlined here?

A. Yes. My estimates are as follows. The channel above Wh
Rock, 121,000 cubic yards of earthwork or excavation at 25 cents
yard, which I have set down at $30,000 plus. Then I have an ite
for extras, $5,000. This has in mind the possibility that there w
be some excess excavation, and key entering, although as I und
stand it, the elevations on which Mr. Simons' map are predicat
were made during the winter time and that they are rather high,
made that estimate that we have on rather a high elevati
21 of the ground surface than otherwise. The channel bel
White Rock, 128,000 cubic yards, at the same price, which
$32,000, with another allowance of $5,000 for extras. The cro
valley dyke, 36,000 yards at 40 cents, $15,000, extras $3,000. Th
might mean stripping and possibly keying; but when we take in
account this matter of keying of course any material taken out
the way of a key will be deposited on the embankment itself, for t
most part, so it is not entirely lost labor. Control works, $10,0
making a total of $100,000. Adding for engineering contingenc
$10,000 would make a total cost of $110,000. In this estimate
do not regard this as any way final. It is an approximation merel
to illuminate the situation in rather general terms. I think
figures are fairly liberal for the conditions of labor and work in th
particular area.

Q. Now I wish you would explain, Dean, in your own langua
the practical working out of this plan which you have propos
explaining why you have expressed the opinion that it will care
this, what you have termed excess flow. I might ask you, first,
to whether or no this plan which you have outlined here to us
one of automatic operation or whether it is one that will require t
release of the stored waters at certain times; in other words, does
involve manual as distinguished from automatic control?

A. The control, so far as opening and closing of the gates a
regulation of the volume of flow through the controlli
22 works is concerned, is manual; that is, the gates are clos
when it appears wise to close them or in the program whi
is set down for their operation, and they are opened when the pro
time comes. They also may be opened in part, or one sluice m
be open and the other closed. In other words, it is an elastic c
trol manually operated.

The basis of my recommendation or project is this. I think
testimony indicated that Lake Traverse, at a time when it was a
high level, had an area of about 30 square miles and was raised ab
six inches due to the excess, and that it started at a somewhat high
elevation due to the fact that the mesne elevation of the lake w
higher, due to more inflow coming out of the ditching system,
though I am not certain as to the exact number of inches, nine
ten, that I estimated as the probable excess flow of Lake Trave
during the flood of 1916, April, 1916. When the lake is low it h
an area of 20 square miles and it would require 50 per cent m
in elevation in order to receive the same amount of excess inflo
I had in mind that the lake would be drawn down, perhaps, duri
the months of November and December, to an elevation of 972,

even 971.5 or 971. Stating that figure for the present as elevation 972, by January 1st normally that elevation would be brought about by the additional outlet capacity that the project has provided. During the months of January and February there will be some flow but the ice conditions are such that it would be lesser in amount and no large dependence has been placed upon that. Some of
23 the water channels are more shallow and even the channel from the south portion of Lake Traverse to the north portion might have rather a small flow capacity under a heavy ice cover. So dependence has largely been placed when there — no heavy ice cover which is beginning in November.

The other item is that the lake is not lowered at a time of navigation,—the freeze-up there occurred probably early in November,—so that navigation might not be interrupted. Until the ice forms very heavy we have a tolerably good outflow capacity and the depth of the ditches had in mind that it would be well to maintain the winter flow. Then when the spring break-up comes, which may be in March and continue into April, if the lake has a foot or foot and a half in depth to carry off those excess waters, we can get by such a flood as we had in April, 1916. If we had 9 inches, let me say, it would take care of floods such as we had in 1916 in April.

During the months of March and April it will be a matter of judgment as to whether to keep on raising your lake or, keeping in mind there is still water to come down from melting snow, to permit a very considerable outflow. But that is a matter of adjustment. Even the volume of outflow which under the natural conditions might cause some flooding of the Bois de Sioux lands would cause less flooding, because the channel would be, over a portion of its length, at least, more effective.

The other element is that, after the flood waters have passed through, the ditch will have some value because it would drain
24 out the land very rapidly. During the spring months, I think it is safe to say, I think, that we could raise the lake to an elevation of from 973 to 974, so that no navigation interest will be adversely affected.

Q. Right there, so that we may not misunderstand you, what sort of a spring are you figuring on in connection with your problem?

A. That is a spring of deficient run-off. Such computations as I have made, which have been aided by information given me by Professor Chandler, lead me to the conclusion that we will be able to raise the lake to 973 or 974, or to some intermediate stage, during the months of March and April, and possibly some years it would require that level during the month of May. The scheme should always have in mind the possibility of a June flood, but as a rule the June floods are, in the number of cubic feet to be accommodated, less than that of the spring break-up. That is the rule in this region. The scheme contemplates the possibility of raising the lake well towards 976 when the supply conditions make this necessary. The proposal is not to safeguard North Dakota land any more than they were safeguarded in a state of nature, except as that may be incidentally accomplished by the necessary works.

Q. Do you recall, Dean, the previous testimony as to the m
mum heights, in a state of nature, that were disclosed, in the
years in Lake Traverse?

A. 1882, 977.

Q. Then, as I understand you, the installation of this p
25 which you have proposed, will not have a tendency to s
guard against natural conditions but is aimed to safegu
against this excess flow, which you estimate at from nine inches
foot, or whatever it may be, over and above what would have c
into the lake under natural conditions; am I right in that?

A. Yes, sir. There has been no intention on my part to work
a flood relief project that would better conditions over the natu
state of affairs, except, as I say, that you cannot accomplish the ot
results without incidentally causing some benefit.

Q. Your plan then, as I understand it, contemplates deepening
outlet of Lake Traverse by the dredging out of the channel of
Bois de Sioux. Just what effect does that have upon the discharg
Lake Traverse so far as affecting its level is concerned?

A. Well, the manual control permits us to practically termin
the flow when we wish, or when we open up our gates to the
extent that the flow would be in accordance with the ditch capa
or channel capacity, which I have already described.

Q. That is not what I am trying to elicit. Under the pres
conditions when does your present discharge from Lake Trav
practically cease now, at what elevation?

A. The exact point is a matter I am not quite certain about,
I have an impression that at the elevation, perhaps, 972.5, you h
very little. Perhaps I can get it more definite by actual referen

I have it on one of my record cards. I visited White R
26 on August 3, 1921, and found the elevation of the water
face there 969.5, and no flow whatever. Under those co
tions the lake is an unknown amount, it might be three feet hig
than that.

Q. That would be what, about 97——

A. I do not know as there is any definite relation between the l
of the lake in time of no flow. It would go down indefinitely,
condition of no flow would continue. That is simply a record
I came across in looking for the other record that I have in mi
On June 22, 1917, as determined by levels taken by Mr. Withee,
was employed by Mr. Ralph at that time, Lake Traverse at the
terstate Bridge had an elevation of 974.25. It was approximatel
that elevation when I made measurements myself at the High Bri
which is below Fairmount, and found the discharge to be 65 c
feet per second. This indicates how, in a state of nature, in
month of June, latter part of June, how little the outflow is for a-

Q. I do not care about that. What I am trying to get at is
what elevation in a state of nature does the appreciable outflow f
Lake Traverse cease?

A. Well I cannot state that definitely.

Q. W[illegible] proximately?

A. Oh, I should judge something about 972, perhaps 972.5.

Q. What effect then does the construction of this additional discharge capacity or dredging of the Bois de Sioux River have, so far as the detaining basin is concerned?

27 It permits the drawing off of the lake to a lower level. We dredge the bottom in the Bois de Sioux River which holds the Lake Traverse in a state of nature at a higher elevation than we wish to have it, having in mind the fact that we wish to make it a detaining basin.

Q. Of course, during the winter months there is no perceptible run-off when everything is frozen up except under the ice?

A. Except in a state of nature when the run-off is very slight.

Q. Then with the Lake Traverse elevation here clear down to 972 or lower, under your artificially increased capacity of the Bois de Sioux River, you have that two feet capacity of a detaining basin to be filled up and take care of the spring floods, is that the idea?

A. You have then the detaining basin capacity of the lake you had in a state of nature, plus the amount that we had lowered it with.

Q. Then, to summarize these various details and data that you have given, is it your opinion that if the changes, artificial changes, to which you have testified were made, that it would result in the safeguarding of North Dakota from this excess flow which might possibly result in raising the level of Lake Traverse during the flood periods of from nine inches to a foot?

A. In my judgment it would undo any damage to North Dakota land which is charged in this case.

(At this time recess was taken until 1 o'clock P. M.)

28 July 18, 1922, at 1 o'clock P. M., hearing was resumed as heretofore.

F. C. SHENEHON, being recalled for cross-examination, testified as follows, examined by Mr. Brown:

Q. Dean, you referred to the United States Department of Agriculture Bulletin No. 1017?

A. Yes.

Q. I take it that you have given that document some consideration.

A. Very little. I used the maps to take off, as I told you, distances, directions and elevations.

Q. Have you read the report?

A. No, I haven't read it fully.

Q. You have given it no study whatever?

A. No adequate study.

Q. You are familiar with the fact that it covers the problem which is under consideration at this time in this case, are you not?

A. No, I am not.

Q. In your previous testimony, as I recall it, you testified there was nothing in the meteorological conditions in the years 1915 and 1916 to cause the floods complained of in the Bois de Sioux valley occurring during those years; is that so?

A. As I remember,—whatever I said is indicated in the r
and I have not gone over the record; I will give you certain
lections. I have a very distinct memory, however, of stating
in the absence of the ditching there would have been a decided
in Lake Traverse and the Bois de Sioux during April,
29 So I think without going into the record I can reiterate
statement, but I did not say there was nothing in the me
logical conditions that would indicate a flood. I said this parti
flood was, as I told you this morning on Lake Traverse, six t
inches above what it would be in the absence of ditching, and
not remember the amount on the Bois de Sioux in the vicini
Fairmount.

Q. I show you Complainant's Exhibit A, used at the pre
hearings and with reference to which considerable testimony
taken, and will call your attention to the portion marked y
on this exhibit. Will you state whether or not that portion c
the lands claimed to have been flooded by North Dakota a
result of the construction and operation of the Mustinka Ditch i
State of Minnesota?

A. I do not know. I have not looked up the old case, I ass
that was closed and that we were talking about remedial meas

Q. You mean to say that you do not know what Dakota lan
is claimed in this proceeding were flooded as the result of the
struction and operation of the Mustinka Ditch?

A. That is all in the prior record.

Q. In the testimony which you have given here to-day, what
in the State of North Dakota did you have in mind as the
which were flooded as the result of this ditch?

A. I had in mind remedial measures that would take care
Lake Traverse above a cross-valley dyke which was mentione
me in my testimony, and that a state of nature would re
30 to the Bois de Sioux valley in the vicinity of Fairmont, s
as the overflow of land is concerned.

Mr. Brown: Repeat my question, please.

(Last question is read by reporter.)

Q. Will you answer that, please?

A. I have answered that and what I told you was this, that
does not enter the case, as I see it, at the present time. We are
talking about remedial matters. That is the reference of the
preme Court, as I understand it. I presented a remedial measu
eliminate any danger to the lands of North Dakota in the Bo
Sioux valley. I do not need to consider that any more.

Q. I am asking you what you propose to remedy?

A. I am not proposing to remedy anything but to remove
danger and take care of the excess flow as shown in the prior re

Q. Does that damage cover the entire portion marked yello
Exhibit A or some portion of it?

A. I don't know. Please understand me in what I am sa
Any damage coming from the excess that comes down the Mus
is taken care of in Lake Traverse itself. So what is shown by

record before and what is shown on the plat, Exhibit A, which I have not seen since about four and a half years ago—you are asking me now to refresh my memory on something that is in that record. As to what you can do to take care of it, I say make Lake Traverse sufficient to take care of this and then we have undone the damage in the Bois de Sioux River and in the Red River of the North
31 because we have taken care of the water.

Q. What I am trying to find out, Dean, is the extent of the damage you have in mind that will be remedied by this project that you suggested.

A. Any damage that was established and testified to in the record, so far as North Dakota is concerned.

Q. Now, take the year 1916, what portion of the floods which occurred in the Bois de Sioux valley during that year do you figure will be taken care of by this project that you suggest?

A. See the record.

Q. That is the only answer you can give?

A. That is the only answer.

Q. Is it a fact, Dean, that this project which you suggest is not expected by you to take care of floods which might spread over the entire area marked yellow on Complainant's Exhibit A?

A. You mean if a flood so much in excess as the flood of 1916 should come along?

Q. Similar to the flood of 1916.

A. No, we are not expecting to take care of but such portions as in a state of nature——

Q. What is that portion?

A. I don't know.

Q. You don't know what it is?

A. I might say to you that when you present a chart which is marked yellow—I rather think this was presented by Minnesota in the original case, I am not certain about that—we are presenting a remedy so that the state of nature is returned so far as the
32 damage is concerned of any lands that were damaged in 1916, that you would have some flow in the Bois de Sioux River that would have occurred in a state of nature, and therefore, the lands that in that particular year were flooded would not be flooded. Now, if that line represents the demarcation of the flood of 1916——

Q. Is your memory so bad that you do not recall Exhibit A in this case?

A. I do not know whether it is Exhibit A or B or C. I remember there was an exhibit of that kind.

Q. Look at it.

A. I do not want to reopen the case. I have not studied the case.

Q. I am not reopening the case, I am trying to get you to tell us what your project would do.

A. If I evolve a method, so far as North Dakota is concerned, of absorbing the water, that is, the excess growing out of the ditching system of Minnesota, why do I need to go down to the Bois de Sioux

River and talk about Dakota lands. This is the remedy we a
ing about; that water would not go down there under the sch
project I have in mind. You are opening the question of the
the Supreme Court has called for a remedy.

Q. The complaint in this case charges Minnesota with fl
the entire area marked yellow; they want damages for the
crops on that entire area, and the testimony taken before wa
on that proposition.

A. Yes.

Q. Now, your testimony this morning indicates that you ha
in mind what North Dakota had in mind originally
33 but you have something else, some strip along in th
that the situation?

A. This is the situation. You have this excess coming fr
ditching system and set down in the record in 1917 and 1918.
is the positive thing. Here is a negative thing which offset
that is, Lake Traverse. Now, when you reach the Bois de
in North Dakota nothing remains. So far there is no dama
that clear?

Q. Take this territory marked yellow——

A. You understand I am talking about my project.

Q. Yes, I understand that. You take this territory, n
yellow on Exhibit A, territory claimed by North Dakota has
been flooded by reason of the ditch. Now, what portion
territory will be protected by your project under conditions
to those which occurred in 1916?

A. Any portion that is covered by the excess of the flood.

Q. What portion is that?

A. Well, see the record.

Q. Is it a strip extending westerly along this portion of
Dakota marked yellow on Exhibit A?

A. See the record on the matter of damages. I am giving re
now.

Q. Can you answer that question, Dean?

A. No, I do not care to answer it.

Q. Is this project that you suggest contemplated to prote
Dakota lands from such floods as occurred in 1915 and 1916?

A. North Dakota lands?

34 Q. Yes.

A. To the extent that that flood was caused by excess.

Q. Now, what conditions did you have in mind when you
this scheme for flood control as compared with the conditi
1916?

A. I had in mind that when the flood of 1916 should come
Lake Traverse would be at a low level, 971 or 972. There i
receptacle, that would absorb the excess, so that any water
would be only the water that might have flowed in a state of
without any ditching in Minnesota.

Q. This project that you suggest as a flood control proje
be of service probably once out of every ten years, somethin
that,—bearing in mind that I am referring to it as a flood
project,—or once in fifteen years?

A. You mean for a flood of the extent of the 1916 flood?
Q. Yes?
A. I should say less frequently than ten years.
Q. Well, how frequently would you figure?
A. I haven't gone into that. As long as you have your measure to put it in, what is the use of going into the frequency? You understand I am confining myself to the project and the remedy. I have not studied all the elements that go into a reopening of the case. I would have to put in another month's study if you are going to reopen the case. I thought it was closed.

Mr. Brown: That is all.

35 Redirect examination.

By Mr. Boutelle:

Q. On cross-examination you were asked whether or no this project which you have suggested here on your direct examination was a project of flood control. Now, I would like to ask you as to whether or no it is project of flood control?
A. It is a remedial measure to take care of and hold in Lake Traverse——
Q. That does not answer my question.
A. Well, let me try to answer it; I understand the question. It is a flood control project only so far as it pertains to that portion of the flood which is excess growing out of the Minnesota ditching operations in the Mustinka watershed.
Q. Over what?
A. Over what the flow would be in a state of nature. That is the definition of excess flow.
Q. Then, so far as this project as you have outlined it is concerned, you assume that the state of nature will remain in the future as it has been in past. Am I right in that, substantially?
A. Yes.
Q. What I want to get at and make plain before you leave the stand is whether or no you have dealt with a problem of flood control, assuming the flood is a productn of natural conditions in this entire area, or have dealt with something entirely different from flood control?
A. My project deals not with the betterment of conditions downstream from Lake Traverse, except as the betterment consists
36 in removing the super-burden imposed by the ditching operations of Minnesota.
Q. Then do I understand you that the natural conditions are assumed in your project to remain the same as they would have been before, nothwithstanding the project is invoked, substantially?
A. Natural conditions, so far as natural phenomena are concerned. There would be some changes in the elevations of Lake Traverse, for instance, as compared with elevations in a state of nature, enough to make it a better detaining basin.
Q. Well, some of us, Dean Shenehon, are not experts in questions

of this kind, and perhaps we have to think and talk in ideas and words of one syllable. What I am trying to bring out and emphasize in this redirect examination is as to whether or no you have aimed to control or prevent floods that have come in the past and will come in the future as the result of natural conditions alone?

A. No, I have not.

Q. Then, so that we can get this thing down to brief form, the sole problem that you have dealt with in this project that you have outlined is what?

A. Restoration, so far as the lands of North Dakota are concerned and the Bois de Sioux valley.

Q. Against what?

A. Against the excess waters coming from the ditching operations of Minnesota in the Mustinka watershed.

37 Q. And the excess flow due to what?

A. Due to ditching operations.

Q. And by the ditching operations you refer to the ditching operations that you have previously referred to in this case in your testimony?

A. In the record.

Recross-examination.

By Mr. Brown:

Q. But you are unable to state what lands you propose to protect by this project?

A. I think I made it rather specific. I say I am protecting any lands that were damaged by the Minnesota ditching operations.

Q. You cannot locate the lands on any map, can you?

A. You think the record does not show definite location?

Q. I am asking you the questions.

A. I do not care to reopen the case, I do not care to restudy it. I do not care to answer that question until I restudy the case so far as the element of damages is concerned.

Q. You are unable to state how many acres this territory contains that you propose to protect with this project?

A. No.

38 E. F. CHANDLER, being duly sworn in behalf of complainant, testified as follows,

Examined by Mr. Boutelle:

Q. Professor Chandler, you were called as a witness at previous hearings in this matter?

A. Yes, sir.

Q. And testified on these hearings?

A. Yes, sir.

Q. You have heard the testimony of Dean Shenehon, the witness who has preceded you on the stand?

A. Yes, sir.

Q. In my examination of Dean Shenehon I tried to frame my questions in such manner as to show that they were all directed at one single fact so far as a remedial measure here was concerned and that that fact was a remedial measure which would take care of the assumed excess flood discharge over what would have existed in a state of nature, caused by the ditching which has been explained and testified to in this case. Did you so understand my questions?

A. I so understood it.

Q. Bearing in mind that my questions to yourself will address themselves to that one feature, have you considered the several questions that were propounded by the order of the Supreme Court?

A. I have.

Q. Is it your opinion, if you have an opinion, that such a remedial measure could be effected by the construction of detaining basins within the Mustinka watershed area?

A. I have never seen or seen reports of any location or locations for detaining basins within the Mustinka area itself that would
39 be of large enough dimensions to cause any appreciable effect except at a prohibitive expense because of flooding a great amount of good agricultural lands.

Q. Then what would you say as to the feasibility or practicability of that remedial measure?

A. I would consider that, although it might be a possibility, it is not practicably feasible, at least; not as compared with other more advantageous and more economical projects.

Q. And what will you say with reference to the practicability or feasibility of attempting to divert this excess discharge with respect to which we are speaking from the Mustinka watershed down the channel of the Rabbit River?

A. I would consider that this might be carried through in such a way as to work some benefit to the Traverse land and possibly to the extreme upper end of the Bois de Sioux valley, but that the lower end of the Bois de Sioux valley would probably not be at all benefitted and it would open the way to claims for damages further down the Bois de Sioux valley and the Red River valley in a great amount, simply because it would accentuate or increase the flood difficulties that would occur in a state of nature more even than this Mustinka ditch did.

Q. What do you say with reference to the practicability or feasibility of diverting any part of this excess flood discharge from Lake Traverse into Big Stone Lake?

A. This alternative, the suggestion lettered "*d*" I think it is, as far as the Bois de Sioux lands and the Lake Traverse lands
40 are concerned could, at a small expense, be made an almost perfect remedy. But in my own notion it would be entirely unpermissible or illegal or contrary to usual practise if there should be any objection from the Minnesota River valley inhabitants, because it would add to the flood troubles down the Minnesota River valley, and they have trouble enough already.

Q. You are familiar, in a general way, with the conditions that obtain in the Big Stone Lake and the Minnesota River valley?

A. In a general way, from a slight amount of personal examination and from the reports of the State Drainage Commission of Minnesota and from other reports.

Q. It is a fact, is it not, that they have questions of flood control that are quite as serious, if not more serious, than those with which we are dealing in this area?

A. Apparently more serious.

Q. Is it in your opinion feasible or practicable to care for this excess flood discharge by merely damming the outlet of Lake Traverse with sluice or control gates there?

A. This, which is project "*b*" as mentioned in the order of the court, would be a partial remedy; but in my opinion there might be still trouble down the Bois de Sioux River because of the, as assumed in the previous evidence, the total outflow from the Mustinka drainage area is not only changed in time but is also somewhat increased in amount by ditching. Then in a wet year the Bois de Sioux would have to carry ultimately more water than previously without any increase in its natural capacity and would cause
41 some flooding damage.

Q. And what would be the effect of that elevation of Lake Traverse so far as North Dakota land is concerned?

A. Lake Traverse in that case would never be lower than in its natural state and in wet years might have the water raise a very large amount and do much damage to the Traverse lands.

Q. We have now covered four of the five questions leaving only the remaining question as to whether or no it is feasible to provide for this excess discharge by combining the dam at the outlet or near the outlet of Lake Traverse with increasing or dredging out the channel of the Bois de Sioux,—is that in your opinion feasible?

A. In my opinion dredging the channel of the Bois de Sioux so as to give it an excess capacity for the purpose of carrying off the excess flow from the Mustinka is the natural and logical remedy. But this would necessitate an unreasonably expensive excavation or increase of the channel of the Bois de Sioux if not combined with a slight amount of detention of the crest of the floods in Lake Traverse. Furthermore, it would be likely to cause trouble or a super-burden further down the Red River. Furthermore, if no sluice gates would be installed, Lake Traverse would be then so drawn down because of the increased capacity of its outlet as to interfere with the navigation interests in Lake Traverse. But by installing sluice gates at the outlet and also placing a low dyke at or near this outlet across the valley, it could be handled so that the lake need never to be
42 drawn down lower than a satisfactory level, and yet it would be possible, even after a series of wet years, to draw it down previous to each flood season to an ordinary low stage. It would thus have a sufficient capacity as a detention basin to hold for a few weeks or few months the top of the flood, that is, the excess portion which works the most injury of any of the flood, to hold it temporarily and discharge that down the Bois de Sioux River after the flood season is past.

Q. Now, have you examined at all the engineering data as prepared by Professor Shenehon?

A. I checked roughly all his computations. I had myself prepared a plan or a design or very nearly the same plan with slightly different widths and depths, which gave slightly different quantities but gave approximately the same results in every part.

Q. What will you say then as to the feasibility or practicability of the project as outlined by Dean Shenehon and disclosed on that set of blue-prints and engineering data here?

A. His project generally as outlined by him, with no modifications except perhaps in nonessential details, is a complete remedy for the artificial changes in the conditions of the Bois de Sioux River and in Lake Traverse that obtain as the result of the artificial change in the channel capacity, etc., of the Mustinka River.

Q. Will you explain briefly, Professor Chandler, in your own way, how this project will bring about the results to which you referred?

43 A. If I might explain, I may give heights of a few inches different from Dean Shenehon because I shall be quoting from my own project instead of his, which is slightly different, but it would be in effect the same. It would be this. Having increased the outlet capacity of Lake Traverse at its outlet and down the Bois de Sioux River which carries the water away an amount at low stage, or at extremely low stage of perhaps about 150 cubic feet per second and at ordinary high stage of 200 to 300 cubic feet per second, it would be possible and simple late in each fall, at the close of the navigation season, to begin to draw the lake down. Or if it had been such a wet season that the lake was already at medium stage, you would begin to draw it down in the middle of the fall; so that, by the middle of the winter, even in the wettest seasons before the close of the winter, the lake could be at its ordinary low stage of 972 or thereabouts. The gates could then be closed during the first two weeks of spring in order to restore the lake to the stage at which navigation is not only practicable, 972, but to a stage of 973 or 974 at which it is entirely convenient, so that no hardship would be worked to navigation. If however, because the previous fall had been a very wet fall, or the winter had heavy snows and it was seen that a heavy spring run-off would be likely, the gates could be kept open and there would be still this excess flow of 200 or 300 second feet running out of the outlet of the lake. When the flood arrived, if it did (which

44 is not every year, not a serious flood) the lake being already at the opening of spring at the height which it naturally reaches only after a dry season, or a series of dry seasons, would have a capacity perhaps two feet higher by receiving a portion of this flood. It could be raised then to 974, kept at the height of 974, in any ordinary year without difficulty, because of the excess outlet capacity it now has. And then, if a summer flood because of unusually heavy rains or heavy wet snow should arrive, a portion of this could still be held in the lake for a few weeks or few months, such as the assumed excess or artifically caused amount of the inflow, and release it down the Bois de Sioux River later in the reason, during the late summer or fall, when the natural stage is low enough so there is the usual capacity. In other words, it would act as an

equalizing basin by making the flow of the Bois de Sioux River more uniform during the year than it is at present under artificial conditions.

Q. Do I understand, Professor Chandler, that as a result of this project you figure that you could control at all times through this excess discharge capacity of the rectified Bois de Sioux and the dam with its flood gates, this excess discharge produced by the ditching conditions in Minnesota?

A. This excess capacity channel in the Bois de Sioux River and with the range of one to two feet detaining capacity in the lake would be sufficient to take care of any assumed excess inflow caused by ditching in the Mustinka basin.

Q. Now, considering this project in its entirety as you have outlined it, is it what you would call a flood-control project?

A. It has to do with water,—it has to control only that
45 portion of the flow, whether it be in a dry year or wet year, control only that portion of the flow which is assumed to have been caused or to have been changed in its time of arrival by ditching in the Mustinka valley.

Q. And I suppose by the word "control" you include or mean the word "detain" that excess?

A. By control I mean it could be held in Lake Traverse for a limited number of weeks or months and released down the Bois de Sioux valley at such time as it is believed the flow is not harmful.

Q. In your opinion would that enable the control of the mesene level of Lake Traverse so as not to interfere with navigation?

A. Lake Traverse could by this mesene be kept continuously between heights 972 and 975 except in such a wet season and except after such a very wet season or series of rather wet seasons as the lake would naturally have risen above that height, it will not be higher than 975 or below 972.

Q. Now, what effect will this project, as you have outlined it, have on what I might term natural flood conditions, that is, flood conditions that would have obtained regardless of any ditching in Minnesota or of any such ditches in Minnesota?

A. It would have no appreciable effect on that except that it has already provided a storage space of one or two feet in depth on Lake Traverse which will detain temporarily a portion of the inflow, and this will be enough, speaking in round numbers, to take
care of any assumed inflow caused by the ditching in the
46 Mustinka territory.

Q. Now, Professor Chandler, what I am trying to make plain if I can is whether or no you have in this project tried to change or modify the natural conditions or have limited yourself simply to guarding against the artificial conditions or the excess discharge caused by those conditions in the Mustinka watershed.

A. If the season is so wet that there would have been a flood in the natural conditions, there would approximately be the same flood under this project but any excess that should have occurred at the time of this flood would have been taken care of.

Q. And the excess flood to which you refer is the excess caused by what?

A. By the ditching in the Mustinka valley, which occurred,—quoting from my memory without looking up the records in the proceedings here,—is supposed to have been about one foot high in Lake Traverse and two feet, or thereabouts, in the lower Bois de Sioux valley.

Q. Now, in the questions propounded by the Supreme Court, in addition to these suggested remedial measures, the court has inquired with reference to the so-termed flood conditions that have obtained since the previous testimony which I think was in 1917. What will you state in reference to that?

A. There has been no flooding whatsoever since 1917 because the years have been naturally since of such small flow that the river channel was able to carry a considerable increase without flooding the lands until this spring, and this spring the flood was not
47 very great.

Q. Can you tell us from recollection what your maximum discharge at Wheaton was since 1917?

A. I have the records——

Q. To save going through the records will you say if it was not April 1917?

A. I have the record here. The maximum recorded discharge of the Mustinka River at Wheaton since 1917 was April 7, 1922, 1,200 cubic feet per second.

Q. Please examine your records a little bit more fully because I think you are in error. I think you will find that your maximum discharge was in April 1917, 2,240 feet.

A. You mean since 1917?

Q. No, I mean since the testimony was taken.

A. I have not the records here but I recall that in April of 1917 there was about 2,240 feet. I was thinking of the record since 1917.

Q. What was the annual precipitation of 1917 as compared with the normal mesne in this same territory?

A. I have the precipitations tabulated from the Weather Bureau Stations of that region and have an approximate average for the Mustinka drainage area. In 1917 the deficiency was 8 inches or thereabouts; in other words, the rainfall was about 16 inches, something less. In 1918 there was a deficiency of about 2 inches. In 1919 there was an excess of about 4 inches, but so far as I was able to find not any large storms——
48 Q. Never mind that, just answer the question.

A. In 1920 the rainfall was about normal; in 1921 there was an excess of about 2 inches. This has been a series of dry years so that the natural runoff was very much less than normal.

Q. Have you examined the meteorological data with a view to determining whether or no in that period there have been any months of abnormal precipitation or wide range of excessive storm?

A. So far as I was able to observe in the station records I found no violent storms except in one or two instances, where it struck only a single weather bureau station.

Q. Where was that?

Minnesota State Library,
St. Paul, Minn.

A. My impression is there was one at Campbell in June of 1919 or 1920.

Q. Is that in this watershed?

A. It is close to that watershed. There have been months where the rains were more than the average but I found none that were abnormally high, that is, very much greater than the normal, unexpectedly greater, and I did not discover any succession of wet months where the excess was sufficient to more than make up for the fact that the previous dry months had drained the soil out.

Cross-examination.

By Mr. Brown:

Q. From December 1, 1921 to March 1, 1922 there was heavy winter precipitation, wasn't there?

49 A. Quoting out of my head, I am not able to say positively, but it is my impression that there was.

Q. Have you any records there?

A. I supposed I have, by looking for that. It is simply a summary of the Weather Bureau records, however.

Q. Well, that is our impression, but if you have the records they will show the fact.

A. October 1921 was,—giving it in round numbers,—for the Mustinka watershed, about .8 of an inch deficiency. November approximately normal; December .2 of an inch deficiency; January .3 excess; February 2 inches excess; March .2 inch deficiency; and April, 1922, .7 of an inch deficiency.

Q. You would say then from December 1921 to March 1922 the winter precipitation was heavy?

A. In those four months there is an excess of about an 1½ inch precipitation or thereabouts.

Q. Would you call that a heavy winter precipitation?

A. Not extremely.

Q. It is above the normal?

A. It is above the normal, an inch and a half above the normal.

Q. How was the runoff that spring from the Mustinka watershed?

Mr. Boutelle: That is, this year?

The Witness: Of this spring?

Mr. Brown: Yes.

A. At the break-up in March on the Mustinka River there was for some days rather heavy runoff. I need to correct the previous

50 evidence. I found in March a flow of only 1,300 cubic feet per second, that was the 23rd of March, but after that it was what you would call an ordinary run-off.

Q. Take the months of December, January, February and March, what do you consider the normal precipitation for those months?

A. For the Mustinka basin in December I consider it slightly less than .7 of an inch. I will read the figures, such as I have them, which are subject to minor corrections from the Weather Bureau records.

Q. You are giving me the normal?

A. The normal or average of the stations. Quoting out of my memory now, I think it was Stations at Campbell, Beardsley, at Morris, and at Fergus Falls, I am not certain, four or five stations. I have a normal for November .71 inches, December .64, January .75, February .61. More elaborate computations might change those slightly.

Q. And March?

A. And March 1.12.

Q. Now give us the total again, please, of the precipitations for December 1921, January, February and March 1922?

A. I have a rough average December .40, January 1.09, February 2.62, March .72. These are merely weighted averages. If an *isohvetal* map was made they might be slightly modified. The total is 4.83, total for the four months.

Q. Now, Professor Chandler, reference has been made to Bulletin No. 1017. Have you given that any consideration in connection with this matter?

51 A. Not to any great extent in connection with that matter except the maps, because that appeared after I had already framed up my project, which is nearly the same as Dean Shenehon's.

Q. Have you read the report?

A. I have glanced it all through.

Q. Have you given it sufficient study to express an opinion as to the feasibility of the project there suggested with reference to the matter of taking care of the flood conditions in the Bois de Sioux valley?

Mr. Boutelle: Objected to as not proper cross-examination.

A. I presumed so because it is, in general, the same project that I advocated and have advocated some six or seven years ago.

Mr. Brown:

Q. It is your opinion that the project outlined in Bulletin No. 1017 will take care of flood conditions in the Bois de Sioux valley, is that true?

A. It would be my opinion that it would cover both the natural and artificial flood conditions in general terms.

Q. And in addition to that would furnish an outlet for the drainage of considerable territories extended both east and west of the Bois de Sioux river not included within the flood area?

A. Yes sir.

Q. Did you observe in this Bulletin No. 1017 that those in charge of the work covered thereby figured that approximately 112,000 acres would be benefited by the project, some 40,000 acres, I think, protected from floods, and the balance given an outlet for drainage purposes?

A. I presume that I did but it did not impress itself on
52 my memory so I cannot say now.

Q. You are unable to state then whether this project will

result in the benefits set forth in that Bulletin to lands approximately 112,000 acres in extent?

A. Not from my own investigation in the details, but the general project seemed to me undoubtedly properly thought out.

Q. Referring now to the project suggested by Dean Shenehon, that project is one which you are of the opinion will take care of lands in the Bois de Sioux valley flooded by reason of the Minnesota ditches under extreme conditions, is it not?

A. It will take care of them to the extent that they have not suffered any more than they would suffer under natural conditions. Referring to the year 1916, as I recollect from the previous evidence, which I have not looked up, it was assumed the Lake Traverse was raised one foot or thereabouts and the water along the lower Bois de Sioux valley two feet, more or less, was raised in excess of natural conditions, it would have prevented that excess lift. Along the greater part of the Bois de Sioux valley, the greater fraction of the acreage there was only submerged a few inches to a foot to two feet deep except right near the river.

Q. The benefits which will be conferred by this project if installed will vary from year to year, will it not?

A. Yes sir.

Q. Some years the benefits conferred will be much greater than in previous years.

A. Yes sir.

53 Q. And some years the benefits will not be as great; there will be a great variance there between the benefits conferred during different years?

A. Yes, sir.

Redirect examination.

By Mr. Boutelle:

Q. Professor Chandler, you have been asked on cross-examination whether the installation of this project would not produce varying benefits in different years. What would be the determining factors in determining what those different benefits would be?

A. It would depend on whether it is a dry year or wet year.

Q. Well, as applied to your previous testimony, we assume it would depend on whether the excess flow due to the Minnesota ditches was two inches or ten inches.

A. Yes sir. In a dry year if the flood is almost double that does not cause any injury; in a very wet year an increase of 20% in the flow works great injury. It is the increase which we wish to protect from.

Q. Now, you have been interrogated on cross-examination with reference to this progress included in Bulletin No. 1017, prepared by Mr. Simons, which has been referred to here. That project, as I understand—and if I am in error you can correct me—is one that contemplates flood control of the entire Red River watershed area.

A. This part which the attorney was inquiring about was——

54 Q. Please answer my question.

A. The report covers the whole Red River valley to the Canadian boundary.

Q. Aren't you in error about that? Doesn't it extend beyond the Canadian boundary up to Winnipeg.

A. I think so, to a slight extent. I wouldn't say positively.

Q. Calling your attention to figure 5 on page 24 of that record, I will ask you to state if this does not show that the watershed area extended into Canada?

A. He includes in his detailed investigation the entire watershed of the Red River and the Canadian boundary, part of which is located in Canada.

Q. Do you recall from your examination of that report what the estimated cost of the project was?

A. I do not recall.

Q. Do you recall it approximately?

A. I do not recall approximately for the whole improvement.

Q. From an engineering standpoint, if the project which Dean Shenehon and yourself have testified here today, as worked out and proposed by you for the special purpose of relieving the excess flood conditions due to the ditching in the Minnesota area would be installed, would there be anything inimical in that to this greater project which is illustrated in this report?

A. It would not in any respect interfere with it.

Q. You have been interrogated with reference to the run-off conditions of the Mustinka watershed during the last winter,
55 1922. The questions were not carried to any very great detail. I would like to ask you to state as to whether the element of precipitation, whether it be taken during winter or during the summer, is the sole element determinative of run-off?

A. The condition of the soil has a very large influence on the portion of the precipitation which runs off.

Q. And just how does the condition of the soil have a very large influence when it is all frozen up in the winter?

A. If there are several weeks of dry weather immediately before the freeze-up, so that the soil is dry when the freeze begins, it freezes in a porous condition so that nearly the whole of the melting snow can soak in. If it happens to be wet before the freeze-up then it is more nearly waterproof.

Q. Isn't there a factor that is still greater than anything you have mentioned so far as the spring run-off is concerned?

A. The time, the suddenness of the spring thaw and whether a warm rain comes at the same time.

Q. Well, what determines that?

A. The spring precipitation.

Q. And what determines that?

A. I don't understand unless you mean that Providence——

Q. What brings this warm rain,—it is temperature isn't it? I want the one word.

A. Yes, it is temperature.

Q. What were the conditions this spring, if you are able to testify, so far as their being favorable to rapid run-off or otherwise?

56 A. I haven't any data at hand as to that.

Q. Have you the data as to the discharge at the Mustinka outlet?

A. At practically the Mustinka outlet, at Wheaton.

Q. Yes, that is what I mean.

A. Average for March 1922, 381 cubic feet per second. This is a preliminary computation, it has not yet been published and may be revised slightly.

Q. And what was the maximum?

A. Maximum nearly 1,300, 1,290.

Q. And can you tell us how long anything like that maximum was continued?

A. One week it was above 1,000, from the 18th to the 24th.

Q. Now, what, Professor Chandler, would the previous meteorological conditions that you have testified to, what effect would those have upon any perceptible flooding conditions during the spring of 1922?

A. I have not them at hand enough to express a definite opinion.

Q. What did you testify was the precipitation during 1917 as compared with normal?

A. About 8 inches less than normal.

Q. 1918?

A. About 2 inches less.

Q. And 1919?

A. About 4 inches more.

Q. And 1920?

A. About normal.

Q. And 1921?

A. About 2 inches more.

Q. Now, what effect would those conditions during these

57 series of years with that slight excess over normal have with respect to floods during the spring of 1922?

A. It would be reasonable to expect that the soil would be in condition to receive more than the normal proportion of the melting snow. It would be reasonable to expect that.

Q. Was there any flood in 1922, in the spring?

A. Couldn't be called a flood, rather high stage.

Q. Why wasn't there?

A. Not enough water running to overflow, presumably because the natural run-off, even increased, was not sufficient to cause flood.

Mr. Brown:

Q. Your answer as to whether there were floods in 1922 is that there were none?

A. Yes, nothing to really call floods, there were none, just a high stage for a week or two.

Q. There have been no floods then since 1916 in the Bois de Sioux valley?

A. No, no noticeable floods.
Q. Has there been any flooding since 1916 in the Bois de Sioux valley?
A. Not sufficient high stage to really call a flood.

Mr. Boutelle: Since when was that date?
Mr. Brown: Since 1916.

Mr. Boutelle:

Q. I was going to ask you, Professor Chandler, in reply to the questions as to whether or no there was any flooding this spring, I intended to confine my question to the Bois de Sioux valley,
58 possibly I did not limit it. I did not intend to ask you whether there was flooding in the Mustinka valley. Do you know whether there was or not?
A. In the lower Mustinka valley there could not have been because the flow was not sufficient to overflow the improved channel. In Lake Traverse there could not have been because Lake Traverse at the end of last fall was at so low a stage that its outflow was practically zero and through the winter the outflow was practically zero.
Q. And at what stage would that be?
A. From the best information that I have, without actual gauging, at 972 or thereabouts.
Q. I think I omitted to ask you, Professor Chandler, as to whether or no in going over the data prepared by Dean Shenehon with reference to this proposed project, you had also checked the costs?
A. Roughly speaking I have.
Q. And what will you say as to the result of your own check as compared with the figures given by him?
A. My total was about 100,000 dollars.

Recross-examination.

By Mr. Brown:

Q. Do you know, Professor Chandler, as a matter of fact, whether there was any flooding in the so called Delta Zone this spring?
A. I have no personal information and no direct or indirect report regarding that zone.

59 Mr. Boutelle: That is all the additional testimony the Complainant desires to introduce on these questions propounded by the Court.
Mr. Brown: We will ask at this time that the hearing be adjourned until 10 o'clock tomorrow morning.

July 19, 1922—10 a. m.

Hearing resumed pursuant to adjournment.

ADOLPH F. MEYER, being first duly sworn in behalf of the State of Minnesota, testified as follows:

Examined by Mr. Brown:

Q. What is your name?
A. Adolph F. Meyer.
Q. Where do you reside?
A. St. Paul, Minnesota.
Q. Is your place of business also in St. Paul?
A. My place of business is in Minneapolis.
Q. You are an engineer?
A. Yes, sir.
Q. What kind of an engineer?
A. I have specialized in hydraulic engineering work.
Q. Of what college or university are you a graduate?
A. Graduate of the University of Wisconsin, 1905.
Q. Will you state some of the work that you have been engaged in as a hydraulic engineer?
A. For a number of years I was in the government service on river improvement works, reservoir construction near the headwaters of the Mississippi River. About five years I was consulting
60 engineer to the International Joint Commission, which had under consideration the utilization and control of the waters of the Lake of the Woods and those tributary thereto, for a variety of purposes. I have also been associate professor of hydraulic engineering at the University of Minnesota and professorial lecturer there for several years, between 1914 and 1919, I believe. I have also acted as consulting engineer to the Minnesota State Department of Drainage in connection with various flood control projects, such as that on the Red Lake River and the Red Lakes and the Minnesota River.
Q. At the present time you are engaged as consulting engineer in connection with those flood control works in the Minnesota River and the Red Lake regions?
A. I am now engaged in studies on the Minnesota River and the Red Lake River.
Q. I call your attention to the order of the Supreme Court in this case, dated April 18, 1921, and show you a copy of it and I will ask you whether or not your attention has been called to that order?
A. Yes, sir, I have read the order.
Q. Without reading the order to you I will proceed to ask some questions relative to the matters concerning which the Court directs testimony to be taken. The Court directs that testimony be taken as to the possibility within the limits of reasonable expenditure of doing away with or ameliorating the flood conditions along

the Bois de Sioux River by means other than the injunction
61 prayed for in the bill herein. This testimony is to be directed, among other things, to the possibility and effect and estimated cost of several projects. The first project referred to is designated in the order as project "*a*". Do you think that the construction of detaining basins for drainage water throughout the watershed of the Mustinka River for the purpose of withholding a part of the spring waters until the flood period is past will result in doing away with or alleviating the flood conditions in the Bois de Sioux valley?

A. I believe that the construction—

Q. Just withdraw that question. Do you think it is feasible and practical to construct detaining basins for drainage water throughout the watershed of the Mustinka River for the purpose of withholding a part of the spring waters until the flood period is past?

A. In my judgment it is possible to construct one detaining basin on the upper portion of the Mustinka River which will have a minor effect in alleviating flood conditions along the Bois de Sioux River. That in my judgment is the only even reasonably feasible site, but the floods originating in that portion of the watershed are of such minor consequence in connection with the overflow of the lands along the Bois de Sioux River that I do not consider that the construction of such a detaining basin to detain waters of the upper Mustinka River would to any material extent ameliorate those floods.

Q. Have you considered the matter of constructing a de-
62 taining basin in the so-called Delta Zone?

A. I have given some consideration to that also.

Q. Will you state just what consideration you have given to that phase of the matter?

A. In my judgment there is no satisfactory site for a detaining basin within the Delta Zone because of the gradual slope of the land throughout that area. There is nowhere a sufficiently cupped shape or natural site to furnish a satisfactory detaining basin within that zone.

Q. Your conclusion then is that the project suggested by "*a*" is not feasiable, as one to do away with or alleviate flood conditions in the Bois de Sioux valley, is that correct?

A. That is my judgment.

Q. Referring now to project "*b*", would you say that the construction of a sluice dam at some point in Lake Traverse for the purpose of increasing its capacity as a detaining basin would have the result of doing away with or alleviating flood conditions in the Bois de Sioux valley?

A. In my judgment the construction of a sluice dam at the outlet of Lake Traverse would increase its capacity as a detaining basin and would, under certain conditions, ameliorate the floods along the Bois de Sioux River, but I do not consider it a practicable way of preventing those floods.

Q. Referring now to project "*d*", would you say that it would be feasible to lower the level of Lake Traverse by means of an outlet to Big Stone Lake, controlled by a sluice dam, with a view to in-
63 creasing its capacity as a detaining basin during the flood period, the purpose in mind being the doing away with or ameliorating the flood conditions in the Bois de Sioux valley?

A. I do not consider it feasible——

Q. State why.

A. —to prevent the floods along the Bois de Sioux River by the method suggested because I do not think that the mere increase of Lake Traverse as a detaining basin will satisfactorily protect the lands now frequently overflowed along the Bois de Sioux River. If the flood water were substantially all discharged from Lake Traverse into Big Stone Lake, so that at no time the present capacity of the Bois de Sioux River would be exceeded by discharge from Lake Traverse, then that method might prevent all flooding, but it would create a burden in Big Stone Lake which, in my judgment, it is impracticable to place upon that watershed. I do, however, believe that a certain amount of water might possibly, even advantageously, be discharged from Lake Traverse during the winter months into Big Stone Lake, when such low water flow could be utilized in power development on the Minnesota River. I do not, however, consider it feasible to discharge the flood waters from Lake Traverse into Big Stone Lake to be taken care of down the channel of the Minnesota River.

Q. Taking up project "*c*", would you say that it would be feasible to divert some of the drainage water from the so-called Delta Zone in order to discharge the same down the Mustinka River to the Rabbit River, the object in mind being to do away with or ameliorate flood conditions in the Bois de Sioux valley?

64 A. In my judgment the diversion of water from the Mustinka River to the Rabbit River would not prevent floods along the Bois de Sioux River because in flood times the Rabbit River even now is producing backwater up the Bois de Sioux. The water from the Mustinka River now passes through a natural detaining basin, viz: Lake Traverse. That basin would be by-passed and the advantageous effects of it would be lost in so far as any portion of that flood water is concerned if it were diverted from the Mustinka River to the Rabbit River and thence to the Red River.

Q. Your conclusions then are that projects "*a*", "*b*," "*d*" and "*e*" are not feasable and practical; in other words, none of them will accomplish the purpose suggested by the order of the Court, is that true?

A. That is correct.

Q. Do you think that a method might be devised in substance, according to the suggestion made by project "*c*," set forth in this order, namely, the artificial improvement in the channel of the Bois de Sioux River in order to improve its capacity as an outlet for the waters of Lake Traverse in times of flood, so as to prevent overflow and the inundation of the Bois de Sioux valley, the works to include

a sluice dam at the foot of Lake Traverse if necessary in order to maintain its level in times of normal flow?

A. In my judgment is it possible and practicable to prevent floods substantially as indicated by that method.

Q. I now call your attention to the United States Depart-
65 ment of Agriculture, Bulletin No. 1017, the same being a publication of the Bureau of Public Roads, and constituting the report on drainage and prevention of overflow in the valley of the Red River of the North, the senior drainage engineer being Mr. P. T. Simons, and ask you whether or not your attention has even been called to that bulletin?

A. Yes, sir.

(Defendant's Exhibit A-1 is marked.)

Mr. Boutelle: If you are going to offer that I would like to interpose an objection to save encumbering the record. If you will offer it at this time I will make my objection.

Mr. Brown: We offer Exhibit A-1 at this time.

Mr. Boutelle: The complainant objects to the offer of this exhibit on the ground that it is a matter of public record which may be referred to, and the complainant furthermore, to save cumbering the record, concedes that reference may be made to that public record without its being introduced in evidence.

Mr. Brown: In view of that statement we will withdraw the offer.

Q. Now, Mr. Meyer, have you given some consideration to Bulletin 1017?

A. Yes, sir, I have.

Q. You have studied it to some extent, I take it?

A. I have studied it particularly with reference to the portion that relates to the Lake Traverse and Bois de Sioux project.

Q. Does the report set forth in this bulletin take up the problem which confronts us in this case?

66 A. It does, in my judgment.

Q. And is there suggested in this bulletin a project the purpose of which is to do away with flood conditions in the Bois de Sioux valley?

A. Yes, sir, there is a project suggested for the purpose of doing away with the flood conditions along the Bois de Sioux River.

Q. Is the matter of doing away with flood conditions along the Bois de Sioux River taken up in this bulletin independent of a consideration of the entire flood region?

Mr. Boutelle: Doesn't the bulletin show for itself?

A. The project for the prevention of floods along the Bois de Sioux River is dealt with as a separate and a distinct project in a portion of the report.

Mr. Brown:

Q. In your opinion could that projct be carried out as an independent one?

A. It could.

Mr. Boutelle: Pardon me, may I ask which project you refer to in that question?

Mr. Brown: The project I am talking about.

Mr. Boutelle: You have been interrogating him with reference to some project in some report.

Mr. Brown: I had referred to that some time ago. I have reference to the project for doing away with the flood conditions in the Bois de Sioux valley.

The Witness: I referred to the project which is described
67 under that heading in the bulletin.

Mr. Brown:

Q. Is that project relative to doing away with flood conditions along the Bois de Sioux River, considered from an engineering point of view, in your judgment feasible and practical?

A. In my judgment the project suggested in Bulletin 1017 will prevent all floods along the Bois de Sioux River. I consider it feasible and practicable.

Q. Referring to this same project, do you think it advisable at this time to carry out a plan as elaborate as the one suggested?

A. I do not believe it advisable to carry out a plan for the protection against floods of the magnitude considered in this project.

Q. Will you state just briefly your reasons for that opinion?

A. The project is based upon an assumed maximum flood which in my judgment is rather unlikely ever to occur upon that watershed, and if ever, probably not with a greater frequency than once in perhaps one hundred years or more.

Q. In your opinion then, it is not necessary to carry through a plan on such an elaborate scale as that suggested by Bulletin 1017 to insure reasonable protection to the lands along the Bois de Sioux River from floods?

A. That is correct.

Q. In your opinion is it possible to do away with or ameliorate flood conditions along the Bois de Sioux River?

A. It is.

68 Q. Will you state, to begin with, in a general way, how in your judgment this can best be accomplished?

A. In my judgment additional data, particularly with respect to the frequency of present flooding and land values are necessary to determine the exact character of the project which would be most economical in protecting these lands from overflow, and in furnishing outlets to additional lands which require it for drainage purposes. But, in a general way, I believe that a project involving an expenditure of a limited amount——

Q. What I want at this time, Mr. Meyer, is simply a very general statement with reference to how these conditions may be done away with.

A. By a project consisting of increasing the detaining basin effect of Lake Traverse and rather extensive channel improvement in the Bois de Sioux River to about the mouth of the Rabbit River, to slightly below the mouth of the Rabbit River.

Q. Have you considered a project, the installation of which, in your opinion, would do away or ameliorate flood conditions along the Bois de Sioux River?

A. Yes, sir, I have considered several projects.

Q. Have you a preference for one of the several projects that you have considered?

A. I have no decided preference for any one of several projects varying somewhat in size as to the——

Q. Will you state in your own way the consideration you have given to the matter of installing some sort of project there to
69 do away with or ameliorate flood conditions in the region complained of.

A. I have considered the excavation of various sizes of channels from the outlet of Lake Traverse to a short distance below the Rabbit River. I have also considered the lowering of Lake Traverse in the fall and winter to various levels, and the construction of controlling works at the outlet to various elevations. I consider that a project involving an expenditure of, roughly speaking, a half a million dollars, as sufficient to protect the lands along the Bois de Sioux River from nearly all floods, and as warranted by the benefit which would be conferred upon the area saved from overflow and the area which could be drained into the improved channel. I don't know whether you care to have me go into it any further at the present time in a discussion of the details.

Q. To what capacity do you propose to dredge the Bois de Sioux?

A. In my judgment it would be desirable to dredge the Bois de Sioux River to a capacity of about 700 cubic feet per second at the upper end, increasing in capacity to about 1,000 or 1,100 second feet at the mouth of Rabbit River. I have not the exact dimensions in mind, because various sections would give that capacity. The best section would be rather a deep section, so as to give the best outlet facilities for the adjacent lands. I have not in mind the exact dimensions of the channel.

Q. Where would you commence with the enlargement of the channel, approximately?

70 A. An approach channel would require to be dredged to carry the water to the control works dam, and when it is desired to draw Lake Traverse down. Then this channel would commence at the control works, to be located about four or five miles south of White Rock, and would extend from the control works up to a point a short distance below the mouth of Rabbit River.

Q. You said that your control works would be stationed five miles south of White Rock?

A. Yes, sir.

Q. What sort of control works have you in mind?

A. I had in mind a control dam, with gates, so that the discharge from the lake can at all times be regulated, and a supplementary spillway over the natural ground level slightly prepared for such purpose, where this had an elevation of about 74.5 or 75, varying from 74 to 75 with the exact project which would finally be found the most economical. The concrete portion of the dam would be,

of course, located in the excavated channel, and would be planned with a view to the possible future extension and enlargement of the flood protection project.

Q. At what elevation would you have this dam you propose?

A. I would propose the spillway itself to be at an elevation varying between 74 and 75. It is not entirely fixed in my mind as to which would be found the most economical, that is, the supplementary spillway The base of the dyke can advantageously be carried up sufficiently high to prevent the possibility of any of the earthwork washing out. This, however, would be very short sections;
71 for most of the distance across the valley there would be a relatively small amount of embankment work to be done. In my judgment the western outlet should be closed and all of the water, on substantially all of the water, discharged through the main Bois de Sioux channel, through the controlling works mentioned.

Q. You propose then, as I understand it, to construct a dyke or dam across the whole valley?

A. Substantially across the valley, but very low in most of the distance across.

Mr. Boutelle:

Q. What are you referring to by the "western" outlet?

A. As indicated on the maps which are now in evidence. There is an outlet known as the western outlet.

Mr. Brown:

Q. You referred in one of your answers to the proposition that the dam you now propose is one which could be later on enlarged in view of the installation of some larger project. What have you to say in that regard with respect to the dredging out of the Bois de Sioux River?

A. The Bois de Sioux River, in my judgment, should be enlarged to substantially the maximum capacity that could be justified by the benefits which will be conferred, so that even the very rare floods may at some time in the future be entirely prevented if that becomes economically justified.

Q. Now, Mr. Meyer, how do you propose to increase the effect of Lake Traverse as a detaining basin?

A. I propose by means of this approach channel which is
72 to be dredged to the control works to lower the lake in the late fall and winter so as to provide additional storage capacity for the spring run-off, and then to bring the lake up again to a level which will be satisfactory for navigation purpose, particularly during the late summer and early fall when most of the navigation is carried on, at the time when they are moving the grain to Brown Valley for shipment. I would propose to lower the level in the winter time to an extent depending upon the fall and winter meteorological conditions, having reference to the extent and character of precipitation, temperature and all other factors having a bearing upon the probable spring run-off. Preceding an expected extremely

heavy run-off I would propose to lower the lake to about 970. During other years I would propose to lower it a lesser amount.

Q. How would the low water level which you have in mind in connection with your project compare with the level of Lake Traverse before the spring break-up in 1916?

A. In my judgment the level would be about 3 feet lower than it actually was in the early spring before the break-up in 1916.

Q. In your answer to the last question do I understand that you meant that in the winter of 1915-1916 by the controlling works which you have proposed you could have drawn the lake down to substantially 970, so that you would have, say, about three feet leeway at the time of the spring run-off?

A. In my judgment the proposed approach channel and control works would have permitted drawing down the lake to a level
73 which in my judgment would have been substantially three feet lower than it probably was before the spring break-up in 1916.

Q. How would your project have functioned in a spring such as the spring of 1916?

A. Starting out with a much lower level it would have been possible to store the amount of water which did run into the lake, other conditions being equal, without having the lake rise to as high a flood stage. In addition to that, the larger Bois de Sioux River and the capacity of the control works at the outlet would have permitted the discharge of larger quantities of water during the earlier flood stage and also quantities of water during the latter flood stages, and in this way the project would have prevented substantially all or most of the overflow in the Bois de Sioux valley and would also have prevented the lake from reaching the level which it did reach in 1916.

Q. Do you propose to raise the level of Lake Traverse under any circumstances, that is, as the result of the installation of your project?

A. No, sir. The control works that I have in mind are to be planned with a view to the lake level never exceeding its natural stage under the same conditions.

Q. Then it will not be necessary, in considering the matter of installing your project, to take into consideration flowage rights?

A. It would not be necessary. In my judgment it would not be necessary to acquire any flowage rights.

Q. What effect will the installation of this project, if it
74 should be installed, have on navigation interests in the lake?

A. In my judgment the proposed regulation will, on the whole, be beneficial to navigation.

Q. Will you explain that a little more in detail?

A. By being able to completely close off the outlet during dry years and portions of dry years, so as to prevent any outflow whatsoever approaching the low stage in Lake Traverse, it will be possible to make better use of such inflow as there is and maintain the lake at a better stage. During several years that are extremely dry there is a possibility—at the same time starting out with a lower level—that the lake might possibly during the navigation season, once in

possibly twenty-five years or more, be slightly lower than it would have been if this control had not been in effect. But to offset that, in my judgment, would be the far greater benefit resulting from the better navigable stage which could be maintained in the lake during the late summer and early fall, when most of the grain transportation takes place. So, in my judgment, the sum total of regulation will be decidedly beneficial to navigation.

Q. Will a complete closing of the control works result in damage to any riparian owners on the Bois de Sioux River?

A. In my judgment it would not because at the present time the records show that the outflow is zero for considerable periods.

Q. Perhaps you have explained it already, I will ask it nevertheless. How do you propose to restore the normal lake level in the spring?

75 A. By closing the control works early in the spring, whenever it is apparent that the available storage capacity is amply sufficient to take care of the spring run-off without raising the lake level to higher than is necessary or desirable for navigation purposes. In other words, I propose to utilize the early spring inflow to whatever extent necessary to restore the lake level to a satisfactory navigable stage, without permitting it to rise to a stage unnecessary for this purpose. In that way the storage capacity for later floods is also increased.

Q. Have you estimated the cost of the project you have in mind?

A. The estimates that I have made have been rather crude and approximate because they have covered projects of various magnitudes, but a project somewhere in the neighborhood of $400,000 or $500,000, in my judgment, would under present conditions be about the best.

Q. Having in mind the dredging of the Bois de Sioux River and the construction of the control works which have been discussed by you, how would that cost be distributed?

A. I am not sure that I get that.

Q. What portion of the cost would go toward dredging out the Bois de Sioux River?

A. The larger portion of the cost, in my judgment, could advantageously be spent in the dredging of the Bois de Sioux River, because I look upon that as the portion of the improvement that should be the basis for any future enlargement and should be substantially complete so as not to involve any duplication of

76 expenditure or loss of initial expense.

Q. Have you considered the apportionment of the expense involved in the project which you propose among the states drained by the Lake Traverse-Bois de Sioux watershed?

A. I have.

Q. Taking into account, among other considerations, the amount of water discharged by each state into Lake Traverse or the Bois de Sioux River and the benefit conferred by the improvement?

A. Yes, sir, I have.

Q. Considering first the apportionment of the expense on the basis of the benefits conferred to lands above the mouth of the Rabbit

River; can you state approximately the number of acres which will be benefited by reason of the installation of such a project as you suggest?

A. If I may in my answer consider lands also in the vicinity of the mouth of the Rabbit River, lying immediately below the mouth of the Rabbit River——

Q. You may take those into consideration.

A. In my judgment there are about 18,000 acres of land which are now subject to overflow which would be very materially benefited by the proposed improvement.

Q. What portion of this acreaege is in North Dakota?

A. There is about 11,000 to 12,000 acres of that 18,000 acres in North Dakota.

Q. In Minnesota?

A. There is about 2,500 to 3,000 acres in Minnesota.

77 Q. And in South Dakota?

A. About 3,000 to 3,500 in South Dakota.

Q. Would this project have any beneficial effect upon other lands in the Bois de Sioux valley?

A. Yes, sir, it would permit a satisfactory draining of other adjoining lands which now have no satisfactory or sufficient ditching outlet because of the inadequate capacity of the Bois de Sioux River.

Q. How many acres?

A. There are about 25,000 acres of such additional lands.

Q. And how are those distributed among the three states mentioned?

A. As I recall it, there are about 6,000 acres in Minnesota, about 19,000 in North Dakota and none in South Dakota.

Q. Now, if the entire cost of the project you suggest were apportioned among these states, what would be the average portion per acres of the lands to be reclaimed from floods?

A. The apportionment, in my judgment, would be about $15 an acre average for the 18,000 acres of lands reclaimed from floods or saved from overflow.

Q. And with respect to the lands which would be furnished outlets for drainage?

A. In my judgment the 25,000 acres which would be furnished ditch outlets would be benefited to the extent of $5 an acre, more than $5 an acre.

Q. In your judgment, would those figures fairly represent

78 the benefits which would accrue to the lands in question?

A. Those would be substantially, in my judgment, the benefits to the lands in question, although there are other benefits which would result from that improvement.

Q. Do you figure any benefits to railroads, public highways and municipalities?

A. The roads across the valley of the Bois de Sioux would be benefited and so would the town of White Rock, and to some extent also the railroads crossing the valley would be benefited.

Q. Could you estimate the extent in dollars and cents of the bene-

fits to the railroads, public highways and municipalities situated in the Bois de Sioux valley?

A. It would be a very rough estimate; somewhere in the neighborhood of $50,000 or $75,000, including in that estimate the benefits to the road, railroads and the municipality of White Rock.

Q. Taking into consideration the apportioning of expense among the states based upon the amount of water discharged by each into Lake Traverse or the Bois de Sioux River, are there accurate measurements available of the amount of water discharged by each state into Lake Traverse and the Bois de Sioux River?

A. No, there are not.

Q. How would you proceed to make an estimate of such amounts of water?

A. I would take into consideration the total area which drains from each one of the states into Lake Traverse and the Bois
79 de Sioux River as one of the important factors in determining such total amount of water contributed.

Q. How many square miles of land drain into Lake Traverse from Minnesota?

A. About 936 square miles.

Q. How many from South Dakota?

A. About 350 square miles.

Q. How many from North Dakota?

A. About 49 square miles.

Q. How many square miles drain into the Bois de Sioux River above the mouth of the Rabbit River from Minnesota?

A. About 50 square miles.

Q. From South Dakota?

A. About 10 square miles.

Q. And from North Dakota?

A. About 110 square miles.

Q. What other factors would you take into consideration besides the tributary drainage area and the square miles drained?

A. I would take into consideration the character of the drainage area with respect to topography and the extent to which the area was ditched or was in need of ditching, and the probable effect of such ditching upon the total amount of water contributed and the rate with which it is contributed to Lake Traverse and the Bois de Sioux River.

Q. Have you any records showing the run-off from any portion of the drainage area under consideration before and after the construction of open ditches?

A. I don't think there are any. I have not been able to find any records extending——

Q. Have you any records showing the run-off from the Mustinka River drainage basin since the construction of numerous
80 ditches on that watershed?

A. Yes, sir, we have records covering the run-off from the Mustinka River drainage basin at Wheaton covering most of the period from June, 1916, to the present time.

Q. What is the nearest stream gauging station on the Bois de

Sioux River below the outlet of Lake Traverse of which you have a record of the stream flow covering a period of years?

A. We have some records of the Bois de Sioux covering portions of that period at Fairmount and Tenney, but on the Bois de Sioux itself we do not have record extending over the entire period. We have them further down on the Red but not on the Bois de Sioux.

Q. Where is the gauging station on the Red?

A. There is a station on the Red River at Fargo for which records are available, covering this period and longer.

Q. Does the drainage area of the Mustinka River and Lake Traverse and the Bois de Sioux River all drain off through the Red River past this gauging station?

A. Yes, sir, all of the water from that drainage basin flows down the Red River past the station at Fargo, except, of course, in so far as any water is lost in transit.

Q. Have you made a comparison of the total run-off from the Mustinka drainage basin with that from the entire Red River basin at Fargo of which the Mustinka is a part?

A. Yes, sir, I have made such a comparison and have tabulated the data so as to put that in more definite form. The data was compiled from the records of the United States Geological Survey and the advance sheets for 1922, furnished through the courtesy
81 of Professor Chandler.

Q. Have you that table?

A. Yes, sir. Lest I should overlook this fact at some later time I would like to state, that in estimating the probable flow during March, 1922, I have assumed less backwater effect at Wheaton than was assumed by Professor Chandler in the preliminary computation. That is, I considered that taking the discharge corresponding to the gauge height would give us a figure nearly comparable with the previous records, and inasmuch as it was in the direction of being favorable to the complainant in this case and in so far as I drew any conclusions from the table I considered it desirable to make that change.

Q. The backwater at what point, did you say?

A. Of the Mustinka River at Wheaton.

(Defendant's Exhibit A-2 is marked.)

Mr. Brown: We offer Defendant's Exhibit A-2 in evidence.

Mr. Boutelle: No objection.

The Commissioner: It may be received.

Mr. Brown:

Q. Referring, Mr. Meyer, to Defendant's Exhibit A-2, will you state what it is, and if you desire to make any further explanation with reference to it kindly do so.

A. Defendant's Exhibit A-2 is a table showing the total runoff, reduced to inches, both on the drainage area of the Mustinka River at Wheaton and the Rid River at Fargo, for all of the months from June, 1916, to date, for which records are available at both stations. In a few instances it was necessary to estimate, usually by in-

82 terpolation, a few missing dates. The drainage area at Wheaton was assumed to be 756 square miles and at Fargo 6,020 square miles throughout the entire period of years, so as to make the records comparable.

This table shows the run-off in inches depth for the months of June to November, inclusive, in 1916, and the total for those months, which is 1.86 inches for the Mustinka River and 2.32 inches for the Red River. The table shows the monthly run-off from April to September, inclusive, for the year 1917, and a total run-off for those months of 1.19 inches for the Mustinka River and 1.18 for the Red River. The table shows the monthly run-off for the year 1920 from March to October, inclusive, and the total for those months, which is 0.61 for the Mustinka and 1.33 inches for the Red. The table also shows the monthly run-off from April, 1921, to October, 1921, inclusive, and the total for those months, which is 0.10 for the Mustinka and 0.50 for the Red. It shows the run-off for the months of March, April and May, 1922, during which the total was 1.25 inches for the Mustinka and 1.16 for the Red. The table also shows the total run-off for the entire period, which is 5.01 inches for the Mustinka River at Wheaton and 6.49 inches for the Red River at Fargo.

Q. Referring to this exhibit, I will ask you whether there are indications that more water runs off from the Mustinka River drainage basin than from other portions of the Red River basin above Fargo?

A. No, sir, there are no indications from this table that
83 any more water runs off from the drainage area of the Mustinka River at Wheaton than runs off from other portions of the drainage area of the Red River at Fargo.

Q. Is there anything to indicate, anything in the records to indicate that the ditch system of Minnesota in the Mustinka River drainage basin has increased the total amount of run-off?

A. There is nothing in the records to indicate that.

Q. Have you made any studies as to the extent to which the ditch system on the Mustinka River drainage area accelerates the flow of water into Lake Traverse?

A. Yes, sir, I have made some studies bearing upon that question.

Q. Will you explain, give the substance of them?

A. I have made an examination of the dates on which the Mustinka River reaches its highest stage or the flood crests and the dates on which the Red River at Fargo reaches its highest stage for all of the freshets and floods for which we have records since 1916, and I have assembled those facts in a table, entitled: "Date of Observed Flood Crests."

Mr. Boutelle: Just a moment. At this point the complainant desires to interpose an objection to this line of evidence on the ground that it is not within the scope of the questions propounded by the Court and that it involves retraversing and going over the ground that was covered by the original testimony and in effect an attempt to reopen the issues and retry the case, and is incompetent, immaterial and irrelevant.

84 (Defendant's Exhibit A-3 is marked.)

Mr. Brown: I assume that is a general objection to all the testimony along this line.

Mr. Boutelle: Yes, sir.

Mr. Brown:

Q. Referring to Defendant's Exhibit A-3 I will ask you to state what that is and to make such explanation as you deem necessary.

A. Defendant's Exhibit A-3 is a table which gives the date on which the Mustinka River reached its flood crest at Wheaton and the date on which the Red River at Fargo reached its flood crest and the difference in days between the dates on which these flood crests are reached. In the year 1916 the Mustinka River crested at Wheaton on July 7, and the Red at Fargo on July 11, four days later. In 1917 the Mustinka crested at Wheaton on April 1 and the Red at Fargo on April 3-4, a difference of three days. In 1920 the Mustinka crested at Wheaton on March 24, the Red at Fargo on March 27-28, substantially four days later. In 1921 the Mustinka crested at Wheaton on April 2, the Red at Fargo on April 6, four days later. In 1922 the Mustinka crested at Wheaton on March 23 and the Red at Fargo on March 27, four days later. In April, 1922, the Mustinka crested on the 7th and the Red on the 11th, four days later. In general the Red River at Fargo, where the drainage area is 6,000 odd square miles, reaches its maximum stage during a freshet or flood about four days after the Mustinka River at Wheaton with a drainage area of 756 square miles reaches its flood crest.

85 Q. Did you state from what source you got the data set forth in that Exhibit A-3?

A. Those dates are compiled from the records of the U. S. Geological Survey and the advance sheets previously referred to as having been furnished by Professor Chandler.

Q. And by Professor Chandler you refer to the witness in this case?

A. Yes, sir.

Q. In view of the larger drainage area tributary to the Red River at Fargo, as compared with that tributary to the Mustinka River at Wheaton, how much later would you expect the Red River at Fargo to reach its maximum stage?

A. In view of the size of the drainage area at Fargo as compared with that of the Mustinka at Wheaton it is my best judgment that the river would crest at Fargo somewhere two or three days later.

Q. To what extent, then, in your judgment, have the drainage ditches accelarated the flow of water into Lake Traverse?

A. In my judgment they have caused the flood crest to reach Lake Traverse somewhere between a fraction of a day to two days sooner than it otherwise would have reached the lake.

Q. Have you made any studies relative to the extent to which the drainage ditches on the Mustinka River have increased the height of the flow in Lake Traverse?

A. I have made some studies which have a bearing upon that question, yes, sir.

Q. Will you go into those studies, please, and explain them?
86 A. I have plotted in the form of a hydrograph typical floods in 1916 and floods or freshets in 1922 for the Mustinka River at Wheaton and for the Wild Rice and other local tributaries to the Red above Fargo, covering a total area of about 3,000 odd square miles. I have presented the data in the form of a hydrograph. To best explain the matters referred to from that hydrograph——

(Defendant's Exhibit A-4 is marked.)

Q. Referring to Defendant's Exhibit A-4, will you state what that is and explain it, please?

A. Defendant's Exhibit A-4 consists of several hydrographs of floods or freshets. In a relatively light line is graphically shown the July flow of the Mustinka River at Wheaton, reduced to the average flow in cubic second feet per square mile.

Mr. Boutelle:

Q. When?

A. During the year 1916, in the upper half of the sheet, covering the latter part of June and the month of July for that year, and for the year 1922 on the lower portion of the sheet, covering portions of the months of March, April and May. The scale at the left-hand side on the lower portion was inadvertently omitted, but is the same as the corresponding scale on the upper half of the sheet. In order to arrive at an estimate of the run-off from the local tributaries, such as the Wild Rice, with a drainage area of over 2,000 square miles, and other tributaries totaling about 1,000 *off* square miles, I have taken the total flow at Fargo and subtracted the contributions of the Otter Tail River, as measured at Fergus Falls, and the con-
87 tribution of Lake Traverse as I have estimated it during those months of June and July. I have previously made my estimate for the outflow from Lake Traverse large——

Mr. Brown:

Q. Are you referring there to the Wild Rice of Minnesota or North Dakota?

A. I am referring to the North Dakota Wild Rice River, which drains into the Red just above Fargo. I have made my estimate of outlaw from Lake Traverse large, as I say, so that I might not attribute water which came from Lake Traverse to the Wild Rice and other local tributaries. The maximum outflow was assumed to be 2,000 cubic second feet. If you subtract the contributions of the Otter Tail River and the upper Bois de Sioux and the outflow from Lake Traverse, the remainder substantially represents the contribution of the North Dakota Wild Rice River and other local tributaries, and we find that the hydrographs are very similar in shape and not substantially different as to the maximum flow reached. When considering the fact that the Mustinka River drainage area is only about one quarter the size of the Wild Rice and other

local tributaries combined, I consider that the flood crest shown for the Mustinka River is, if anything, lower than I would expect it to be, other conditions equal. In the year 1922 there were several flood crests or freshet crests. In that year the flow of the Bois de Sioux representing substantially the outflow from Lake Traverse was available, but it was necessary to estimate the flow of the Otter Tail River at Fergus Falls. A similar computation resulted in the hydrograph shown. The winter snowfall over the Mustinka River drainage basin was sufficiently greater than that over other
88 portions of the Red to substantially account for the greater flood, the higher flood crest, reached by the Mustinka, also taking into consideration the condition of the drainage areas. During the next open season freshet the flood crests for the Mustinka and the North Dakota Wild Rice and other local tributaries are again substantially similar, showing that there is no indication in these floods or freshets to show that the flood crest of the Mustinka River is materially higher than it would have been if there had been no drainage ditches constructed on the watershed.

Q. Having in mind now your conclusions to the effect that the drainage ditches in the Mustinka basin have not increased the total run-off but have accelerated somewhat the flow of the water into Lake Traverse, what do you say as to the effect of the drainage ditches upon the level reached by Lake Traverse during a flood?

A. In view of the slight acceleration of the flow as the result of the drainage ditches it is my judgment that this more rapid inflow into Lake Traverse resulted in a lower flood crest than would otherwise have resulted, although the difference is relatively small.

Q. Have you made any computations to prove that statement?

A. Yes, sir, I have made computations for the year 1916.

(Defendant's Exhibits A-5, A-6 and A-7 are marked.)

Mr. Brown: We offer in evidence Defendant's Exhibits A-5, A-6 and A-7. Defendant's Exhibits A-3 and A-4 have not been formally offered as yet; we offer them at this time also.

89 Mr. Boutelle: It will be understood that those come in under the same general objection.

Mr. Brown:

Q. Will you explain what Defendant's Exhibits A-5, A-6 and A-7 are and discuss them?

A. Defendant's Exhibit A-5 is a rating curve of the outflow from Lake Traverse, based upon the best available data as to the relation between lake level and discharge, although complete records would undoubtedly modify the curve somewhat. I have assumed various modifications of the curve in preliminary computations with the result that the exact form of the rating curve, in so far as any reasonable variations from this curve are concerned, has no effect upon the conclusion; so that this curve, admittedly more or less approximate, serves the purpose equally as well as one of a high degree of accuracy. I have then constructed or represented graphically an assumed rapid inflow into Lake Traverse and an assumed slow inflow into the lake. These assumptions are presented graphically in

Defendant's Exhibit A-6. The principal computations are also assembled in the form of a table.

(Defendant's Exhibit A-8 is marked.)

Mr. Brown: We offer in evidence Defendant's Exhibit A-8.

Mr. Boutelle: It may be understood that all those exhibits come in under the same general objection?

Mr. Brown: It may be so understood.

Q. I hand you Defendant's Exhibit A-8; I take it you want to consider this exhibit in connection with the exhibits just
90 offered.

A. I do. The rapid inflow into Lake Traverse in the spring of 1916, which I have assumed resulted in a lake stage, according to my computations, of substantially 977, assumed a maximum rate of inflow of nearly 6,000 cubic feet per second, the assumed slow inflow reaching a maximum height of a little over 3,000 cubic feet per second. The total amount of water getting into the lake was assumed to be the same in both cases. In the case of the rapid inflow the lake level reached as a maximum was substantially 977; in the case of the slow inflow the lake level reached was substantially 977.3.

Defendant's Exhibit A-7 shows the rate at which water would have been flowing from the lake under the two conditions of assumed rapid inflow and slow inflow, as based upon the rating curve, Defendant's Exhibit A-5. The maximum rate of outflow reached under the condition of slow inflow was very materially greater than the maximum rate of outflow reached under the condition of rapid inflow, so that not only did the rapid inflow assumed result in a lower lake level but also in a lower maximum rate of outflow. Defendant's Exhibit A-8 is a compilation of the principal computations appearing upon Defendant's Exhibits A-6 and A-7.

Q. Have you made similar computations with reference to any other lake or lakes?

A. Yes, sir, I have made similar computations for the Lake of the woods and for Lake Superior.

(Defendant's Exhibits A-9, A-10, A-11 and A-12 are
91 marked.)

Mr. Brown: Defendant's Exhibits A-9, A-10, A-11 and A-12 are offered in evidence.

Mr. Boutelle: Same objection.

Mr. Brown:

Q. I hand you Defendant's Exhibits A-9, A-10, A-11 and A-12; will you kindly explain what they are and what they mean?

A. Defendant's Exhibit A-9 shows graphically the lake stage actually reached in Lake Superior in 1894 during a condition of rapid inflow, and the stage which this lake would have reached in a condition of assumed slow inflow. The computations bearing upon Exhibit A-9 are summarized in Exhibit A-12. Exhibit A-9 shows that if the inflow had been as assumed at a relatively slow rate, the lake would have reached a level slightly higher than it actually did reach under a condition of actual rapid inflow. Exhibit A-10

shows graphically the natural lake level for the Lake of the Woods in the year 1916 and the natural inflow into the Lake of the Woods during that year. It also shows the computed lake level which would result from a condition of rapid inflow, as shown graphically on the lower portion of the exhibit and the lake level which would result from the slow inflow, shown on the lower portion of the exhibit. Exhibit A-11 summarizes the principal computations bearing upon Exhibit A-10. For the condition of natural inflow, which is an intermediate condition, a lake level of 1,060.48 was reached, for the condition of rapid inflow a level of 1,060.29 was reached, and for the condition of slow inflow a level of 1,060.57 was reached, or
92 a level substantially .3 higher than for the condition of rapid inflow. A number of additional preliminary computations were made indicating extremely high rates of rapid inflow with a further lowering of the maximum lake level reached. A number of intermediate computations were also made, the tendency being throughout the assumptions for the rapid inflow to result in a lower lake level than the slow inflow.

Q. In view of these facts regarding the beneficial effect of the rapid inflow into the lake, what would you say as to the possibility of the ditching in the Mustinka drainage basin having caused the flooding of lands along the Bois de Sioux River?

A. In my judgment the acceleration of the inflow into Lake Traverse such as the indications are and would seem reasonable to expect from a drained area has been somewhat beneficial to Lake Traverse and the lands along the Bois de Sioux River rather than otherwise because the more rapid inflow results in a slightly lower lake level and consequently a slightly lower rate of outflow.

Q. Taking all things into consideration, in your opinion what is the equitable basis for apportioning the expense of the construction of the project you have suggested among the three states referred to?

A. In my judgment the equitable basis for apportionment is on the basis of direct benefits resulting from saving lands from overflow and affording outlets for drainage ditches, directly in proportion to the total area lying within each state of the two types
93 mentioned; that is, the lands which would be saved from overflow and the lands which would be given drainage outlets.

Q. You have stated that in your judgment the slight acceleration of flow caused by the ditches in the Mustinka watershed has not resulted in raising the level at flood times above what it would be raised in a state of nature?

A. Yes, sir, that is my judgment.

Q. Will you explain why that is so?

A. In my judgment that is so because when the inflow comes into the lake rapidly you are making better use of the outflow capacity during the time that the water is coming into the lake and before the outflow capacity reaches its maximum, that is, at the time when both inflow and outflow are equal and the lake crests.

Q. I call your attention, Mr. Meyer, to Complainant's Exhibits A-5 and A-6 and also the testimony given yesterday by complainant's

experts with reference to these exhibits, and ask you whether or not the project suggested has been given some consideration by you?

A. Yes, sir, I have given such consideration as has been possible during the time that elapsed since the testimony was given.

Q. Do you think that the project suggested would do away with or ameliorate flood conditions along the Bois de Sioux River?

A. In my judgment the project suggested would not do away with the flood conditions along the Bois de Sioux River, but under certain conditions it would ameliorate those flood conditions and during others, in my judgment, there is danger of flood conditions
94 becoming worse.

Q. How do you account for that?

A. It is my judgment that during the times of excessively high inflow into the lake a dyke at elevation 978, with a spillway crest at 976 and a sluice dam capacity such as is shown by Complainant's Exhibit A-6, the lake would rise sufficiently high to wash out the embankment, in which case flood conditions below would necessarily be increased because of the more rapid discharge of stored-up water which could have been gradually discharged. In my judgment there is a question also whether the discharge capacity available between the stage of about 975 and 976 is not actually less than the natural out-flow capacity at that stage and is sufficiently small to rather overbalance the larger outflow at the lower stages. So that from such examination as I have been able to give the project, I have some doubts about its sufficiency to discharge the water at a rate during an extreme flood which, when added to the additional storage provided in the lake, will not cause a wash-out of the embankment. The amelioration of flood conditions, in any even-, could be only very minor.

(At this time recess was taken until 1 o'clock P. M.)

95 July 19, 1922—1.00 p. m.

Hearing was resumed, as heretofore.

ADOLPH F. MEYER, being recalled for further direct examination, testified as follows:

Examined by Mr. Brown:

Q. Mr. Meyer, you testified, as I recall it, that according to the records of precipitation and run-off you find there are no indications that the run-off from the Mustinka is any greater than in any other portion of the Lake Traverse-Bois de Sioux watershed, is that correct?

A. Than any portions of the watershed of the Red at Fargo. That includes all of the tributaries entering above Fargo.

Q. From that situation, what conclusion do you draw with reference to the run-off of the Mustinka, that is, as to whether it is greater by reason of the existence of the ditches than it would be in a state of nature?

A. In my judgment that is nothing in the records to indicate that the run-off is any greater than it would be if there were no ditches,

and in my judgment the run-off would not be substantially greater considering the character of the watershed and all factors that influence run-off. I would not expect to find any material change in the amount of the run-off from that watershed as the result of the construction of drainage ditches in the so-called Delta Zone and other portions of the watershed.

Q. You referred to factors determining run-off. Just what do you mean by factors?

96 A. The factors that determine the total amount of run-off from a given watershed are many and involved and found in an almost infinite number of ways on various watersheds and even on the same watershed. Among those factors are, of course, the primary cause, which is precipitation and its distribution, the topography, character of the soil, state of cultivation, vegetation on the watershed,—a good many other similar factors.

Q. What are the conditions in the Mustinka watershed which lead you to the conclusion that the run-off with the ditches is no more than it would be in a state of nature?

A. The Mustinka River drainage basin is a combination of a great variety of conditions affecting run-off as to topography, state of cultivation and ditching. The portion which has been referred to as the Delta Zone is a gradually slopping tract with a fall of about five feet to the mile, with a considerable number of flowing wells scattered through it, indicating that the area is under pressure of water from underneath, which in a state of nature undoubtedly helped to keep water near the ground surface, except as it was being evaporated during drier years. The soil, on the whole, is rather heavy. Under present conditions it is quite thoroughly cultivated throughout the Delta Zone. A large amount of fall plowing is done. Other portions of the watershed are naturally relatively slow. Those in the moraine zone, while the territory itself as to topography is rather rough, hilly, there are hills and between the hills there are depressions, swales, marshes, ponds and lakes which very materially re-

97 tard the run-off from that section of the drainage area. In fact, I consider the moraine zone as being, on the whole somewhat similar to large portions of the Otter Tail Watershed lying directly north of this moraine zone. I consider that, as a whole, a relatively slow area; that an area such as——

Q. What is there about such an area that makes it slow?

A. The water runs off from the hills themselves rather rapidly into the ponds and marshes and is detained as it flows from one pond and marsh to another, which acts as a small detaining basin and must be raised somewhat before the outflow is increased. So that, in its course from the edge of the watershed, for example, to the main stream, the particle of water is frequently retarded very seriously in its flow, even though it runs off rapidly from the initial hillside on which it falls. In the case of the Delta Zone, which slopes gradually, the channels themselves well indicate by their size that in times of flood tremendously large volumes of water were carried away by them. Comparing Twelve Mile Creek, for example, with the upper Mustinka, we find that the upper Mustinka is a relatively small

stream compared with Twelve Mile Creek. In my judgment the lower portion of the drainage area, except for certain tracts around the headquarters of the tributaries, really are relatively fast rather than slow under natural conditions. This, coupled with the fact of the flowing wells and the pressure of the ground water from underneath, had a tendency, combined with the heavy precipitation in times of protracted rains, for example, to create a surface
98 condition which resulted in relatively heavy run-off. The effect of the drainage ditches has been to lower the water content in the upper several feet of soil and therefore increase its ability to absorb water. During excessively heavy concentrated rains the ditches undoubtedly gathered water and carried it away faster, as indicated this morning, to the extent of from a fraction of a day to a day, and carried off, so to say, the tail end of the water more rapidly than would be indicated by the rate at which the flood crest is reached. In that way there are conditions where the drains themselves in the case of freshets will carry down more water, but that, in my judgment, is counterbalanced by the other condition which I indicated where under natural conditions that ground was in a better condition to shed water than it is under the present cultivated condition.

Now, the total amount of water is made up primarily of flood run-off. The low water flow from a watershed of this character is relatively a small portion of the total run-off. Considering then, those two primary factors which go to make up the total run-off, it is my judgment that it is reasonable to find no indications in the records themselves of any increase in total run-off from the Mustinka River watershed as compared with other tributaries in the same drainage basin somewhat similar in character. I have also compared the upper Minnesota River run-off and in a similar way have found no outstanding difference one way or the other. The records on their face indicate more run-off from the remainder of the drainage basin above Fargo than from the Mustinka River
99 drainage basin at Wheaton, but I do not attach a great deal of significance to that fact. Even after making due allowance for the flow of the Otter Tail River at Fergus Falls the fact remains that the records indicate approximately the same amount of total run-off, and in my judgment that is to be expected when all of the factors that influence run-off from that watershed are taken into consideration.

Cross-examination.

By Mr. Boutelle:

Q. Mr. Meyer, you were not called as a witness on the previous hearings in this case?

A. No, sir.

Q. Are you at the present time employed in any capacity by the State of Minnesota?

A. Yes, sir.

Q. And over how long a period has that employment extended?

A. This present engagement dates back about a year, I believe, or year and a half.

Q. And that capacity has been what?

A. Consulting engineer to the Department of Drainage and Waters.

Q. And previous to the year and a half had you been employed in a similar capacity?

A. I was employed in a somewhat similar capacity previous to that.

Q. And how long previous?

100 A. I don't recall the time when I was first engaged.

Q. Just approximately.

A. September 29, 1919.

Q. And how long a period did that employment continue?

A. Approximately a year and a half, I should judge.

Q. And previously to that, had you been employed in a similar capacity by Minnesota?

A. I do not recall any previous engagement in a similar capacity.

Q. Or in any capacity?

A. I have already referred to my work at the University; have you reference to that?

Q. No, I don't refer to that at all. Then, in the aggregate, over about how many years have you been engaged by the State of Minnesota in the capacity which you have indicated?

A. About a little less than three years.

Q. And you are employed in that capacity at the present time?

A. Yes, sir.

Q. When was your attention first directed to the issues in this case?

A. When I was asked to serve as an expert for Minnesota.

Q. And when was that?

A. I believe that was some time last August.

Q. And previously to that time, had you had any occasion to personally investigate on the ground this Mustinka watershed area?

A. I had been on the ground but had made no investigation of any magnitude as to the area itself.

Q. When were you on the ground?

101 A. In connection with my work for the United States Engineer's office when I first examined Lake Traverse.

Q. And how long were you on the Mustinka watershed at that time?

A. I was just at Wheaton, as I recall it, and the lower Mustinka in the course of a few days' investigation.

Q. That was confined to the lower portion of the watershed?

A. Yes, sir.

Q. Since that time how extensive an investigation have you made of the actual conditions in that watershed area?

A. I have been there twice and have gone over the ground in considerable detail. I believe I have spent, as I recall it, a little over a week from daylight to dark——

Q. On the ground?
A. On the ground.
Q. You were not there at the time of the floods in 1916 and had no opportunity of observing the conditions during those floods?
A. No, sir.
Q. Or during 1915?
A. No, sir.
Q. All of this complicated data that you have given us then, in your testimony here, is very largely data compiled from the investigations of others, isn't it?
A. I should say no, that as a basis for it there is a small group of records of stream measurements and observations of stream stages, but those are relatively minor portions. They furnish certain physicial bases.
Q. Yes, I understand that, but what I was trying to inquire of you was that practically all of this matter that you have
102 given us the benefit of in your extended direct examination is data, such of the data which you think is pertinent and material which has been accumulated by the investigations of others than yourself?
A. I should say that a very large portion of it is based upon my detailed examination of almost every mile of ditch within the Mustinka River watershed.
Q. During this week to which you have called our attention?
A. Yes, sir.
Q. Now, at what time were you on the Mustinka watershed?
A. First in the fall, in September, 1921, and the latter part of May and early in June, 1922.
Q. Was there any perceptible water in the watershed at that time, or either of those times?
A. No, sir.
Q. And no flow at the Mustinka outlet, that is, I mean appreciable flow?
A. Yes, there was flow in the Mustinka River.
Q. I am not trying to quibble, I am contrasting normal things with flood conditions and high stages. There was no high water at that time?
A. I have said there was some flow. There was a normal flow, no high water, as I previously stated.
Q. I have here what purports to be a text book entitled: "Elements of Hydrology," by Meyer, which appears to be published by John Wylie & Sons. Are you familiar with the author of
103 that text book?
A. Yes, sir.
Q. Quite closely related to him, I take it?
A. Yes, sir.
Q. In fact, that text book is one that was prepared by yourself?
A. It is not a text book.
Q. Pardon me, I should have said treatise, that would be more correct?

A. Possibly it need not be dignified even by that expression, but the book was prepared by me.

Q. That is the essential thing. Has your retainer by the State of Minnesota as an expert in this case caused you to change the basic ideas which you have indicated in that book?

A. No position which I am now holding or ever at any time held has at any time affected my conclusions with respect to physical matters.

Q. That does not answer my question, Mr. Meyer. I asked you if your connection as an expert with Minnesota in this case has caused you to qualify the opinions and conclusions you have expressed in this book?

A. That has not, no, sir.

Q. So that we may fairly assume in the further conduct of this proceeding that the conclusions expressed by you in that book to which I have called your attention represent your conclusions at the present time?

A. No, not at all.

Q. You have qualified them since the book was written?

104 A. We grow.

Q. Well, we will assume then that this book is out of date?

A. To some extent, yes.

Q. I note by reference to the date of publication in this book that it appears to have been published in 1917, so that the growth to which you have referred has been a matter of the last five years?

A. And that in the field of hydrology is a very long period of time.

Q. Now, coming to your direct testimony here, you have proposed what you consider as a feasible and practical remedy for flood control in the general area with which we are dealing?

A. Yes, sir.

Q. And if I understand you correctly, by flood control you are dealing with the maximum results that we may meet from time to time under what we scientists and hydrologists call extreme conditions of flood?

A. No, the project concerns itself primarily with the prevention of the more ordinary floods.

Q. What I am getting at, Mr. Meyer, is that the project which you have suggested here today is one that deals with general flood conditions, if general is a proper term in this area?

A. In that area, yes, sir.

Q. And it has no reference to any partial flood control or partial flood caused by any particular area or condition?

A. It has no specific reference to any particular flood

105 caused by any particular area.

Q. That is what I mean. You have taken as the basis of this project which you have proposed all of the conditions which you assume may be normally expected there in this area under conditions of nature and have attempted to devise a plan that will ameliorate those conditions as you see them?

A. Including in that such artificial conditions as now exist on the watershed.

Q. Certainly, the conditions as they are now. That plan, as I understood your testimony, was contemplated to affect a drainage area of how many thousand acres in gross?

A. It would affect two classes of areas; I am not certain which one you refer to.

Q. I mean the total, whether the effect was to save from flooding or the indirect effect of improving the drainage.

Q. A total area, I believe, of 43,000 acres.

Q. And took us substantially how far north?

A. To a short distance below the mouth of the Rabbit River.

Q. That would be about how far below Grand Forks and Fargo?

A. I don't know how far it would be from Grand Forks and Fargo, it is approximately a short distance below the mouth of the Rabbit River.

Q. In the acreage did you consider the acreage included in the Mustinka watershed?

A. No, sir.

Q. You did not consider that at all?

106 A. That is, in that acreage of 43,000?

Q. Yes, sir.

A. No, sir, that does not include that.

Q. So that the flood control plan which you have proposed and are now proposing excludes consideration of the Mustinka watershed area?

A. Not at all, very fully considered.

Q. I understood you to say in your answer a moment ago that it did not?

A. That the area of 43,000 acres in no way includes——

Q. That was not included as affected by your project; am I right in that?

A. The question originally was, was not considered. If you will kindly ask that question again, so I will have a specific question.

Q. I am just trying to get myself clear on that proposition. Read it.

(Questions and answers are read by the reporter.)

Q. Is that plain?

A. Yes, sir. There was another question that was asked, if it was included in the consideration of the project.

Q. My question was intended to be confined to acreage and your answer is as you previously indicated?

A. That the lands which would be both saved from overflow and given drainage outlets along the Bois de Sioux River amount to an aggregate of 43,000 acres.

Q. And did that 43,000 acres include the acreage within

107 the Mustinka watershed?

A. No, sir.

Q. In reaching the conclusions which you have reached here with reference to this project which you now propose, I understand that

you assumed no appreciable change in the flood conditions in either Lake Traverse or the Bois de Sioux River as due to the ditching construction within the State of Minnesota?

A. Yes, I assumed some change in the conditions.

Q. I understood you on your direct examination to say that you did not consider that any excess run-off or flood flow would be due to the ditching construction in the Mustinka watershed?

A. I did state that so far as the level of Lake Traverse was concerned there was some slight effect and that that was beneficial.

Q. And I am correct in saying that substantially, so far as run-off is concerned, your project presupposes that there has been no appreciable run-off from the area which we include in the Mustinka watershed by reason of the ditching construction in Minnesota?

A. That is substantially correct.

Q. Now I want you, if you will please do so, Mr. Meyer, to forget for a moment all of this complicated theory that you have so entertainingly presented to us today, and I want you to assume that the ditching construction in Minnesota did appreciably affect the run-off from the Mustinka watershed, that that increased run-off would be from fifty per cent up, and that that increase, under extreme flood conditions, would perhaps be maintained at a greater
108 ratio than fifty per cent, so that, for instance, we might have a period of ten days in which the inflow from the outlet at Wheaton into the lake was from 800 to a thousand second feet in excess of what it would be in a state of nature. Now, is my long preliminary clear?

A. I think so.

Q. Do I understand from the variety of computations that you have presented here today in that assumed state of facts there would be no change in the level of Lake Traverse?

A. No, it does not necessarily follow.

Q. Now, so that I may know whether your "no" applies to one thing or another, I will ask the question in a slightly different form. Do you mean that the level of Lake Traverse, the natural conditions otherwise remaining as they are, would not be affected?

A. The level would be affected.

Q. In what way?

A. That would depend somewhat on the exact distribution of that 800 to 1,000 second feet of inflow, the level at which we started out when that condition took place, and the exact condition of the outlet.

Q. Well now, we will assume that the outlet, so far as the physical condition is concerned, is the ordinary, that is, the natural condition as that has existed all along. We will assume any level of the lake that you want to assume to start with. We will put the excess of from 800 to 1,000 second feet into that lake over a period of
109 ten days. Now, I ask you what the effect of these circumstances would be on the level of Lake Traverse?

A. We have no record of the natural condition of the outlet as to the relation, as to its capacity at various stages.

Q. I thought you had examined all this?

A. I have examined the outlet but I think we have no accurate record of the relation between the lake stage and the channel.

Q. You saw the channel?

A. Yes.

Q. You know what level the lake would have to reach in order to have any appreciable outflow?

A. That varies with the different seasons of the year very materially.

Q. Wouldn't it vary with the lake level?

A. Yes.

Q. Do you mean to say to me that you cannot figure what the outflow of Lake Traverse would be at different levels, at 974, 975, 976?

A. Not accurately, no, sir.

Q. You could very closely approximate it, couldn't you?

A. Not even very closely approximate it.

Q. And you will say then that, if I understand you correctly, in the hypothetical case which I have supposed and the natural conditions as you have seen them and as they have been testified to by all the witnesses that have been on the stand before, that you cannot give us any conclusions of what effect that excess volume of water coming into Lake Traverse in that ten day period
110 would have on the level of the lake?

A. I should say you cannot give any reasonable conclusion from the data that has been presented to me here in the way of assumptions to make.

Q. From your previous testimony I assumed it was your opinion that those conditions would lower the level of the lake?

A. I have not stated that these conditions which you have assumed would lower the lake.

Q. Well, if you do not assume that they would lower the lake, do you assume that they would raise the lake?

A. They would probably raise the lake somewhat, yes, sir.

Q. And can you tell us how much?

A. No, I could not make an approximation.

Q. Couldn't even give a guess?

A. A guess would be useless, worse than useless.

Q. Now I would like to have you tell me, suppose we had in any given area land of very gradual fall, that area constituting the confluence for a comparatively large watershed, so that in times of excess precipitation, such as in the spring break-up and times of sudden rainfall, there was a tendency for waters to impound or accumulate there, and by reason of the fact of the inadequacy of the natural channels that water could not run off—do I make a sort of a general picture so that you see it?—and we tap that water with artificial ditches having far greater capacity than the natural channels, those ditches outleting in the ultimate outlets where the water has flowed in a state of nature,—what is the effect on those ultimate out-
111 lets?

A. I would say that you have made several impossible assumptions; until those are cleared up I cannot answer.

Q. All right, you show me where I have made impossible assumptions.

A. That the water could not run off from that area.

Q. Did you ever hear of Devils Lake?

A. Yes.

Q. What is the outlet?

A. I do not know about the details of Devils Lake at all.

Q. Did you ever hear of any outlet?

A. I do not know about the details of Devils Lake, I have heard of it. I am speaking of the gradually sloping area which you have asked me to assume from which the waters could not run off. I consider that an impossible assumption.

Q. You do not consider that a slope could be so gradual that while you could have a very slight and almost imperceptible fall it would be so sluggish and gradual that you would have an impounding area; you say that is an impossible situation?

A. A gradual slope such as I would ordinarily consider a gradual slope, that would be impossible, but if you will specify what you mean.

Q. I gave it to you, I said five feet to the mile.

A. I beg your pardon, I don't think it was mentioned.

Q. I intended to, I intended to take a comparative slope to what we have in the Mustinka area.

A. I would say that a gradual slope of five feet to the mile
112 was not sufficient to impound any large amount of water.

Q. Can you conceive of anything in the way of a natural detaining basin for surface water?

A. Can I conceive of that?

Q. Yes, sir.

A. Yes, sir, certainly.

Q. Can you conceive of such a natural detaining basin as one whose outlet channels are wholly inadequate to take care of the surplus waters in times of spring break-up and sudden precipitation?

A. That is an essential feature, that the outlet channels should be such that the outflow is less than the inflow at certain times, otherwise it would not act as a detaining basin.

Q. Then if you put ditches in, with an increased carrying capacity to that of the natural channels, so as to tap that detaining basin, what is the effect so far as drainage is concerned?

A. So far as drainage is concerned?

Q. Yes.

A. I don't know what you mean by drainage in that case.

Q. Drawing off the water, if that is plainer.

A. If the outlet channel is increased the water can be drawn off more rapidly.

Q. If the water is drawn off more rapidly from such a detaining basin as that and the distance to the ultimate discharging channels is short, relatively, the flow in the ultimate channels is going to be very materially increased?

A. The extent depends entirely upon the extent of the improve-

ment. No assumption has been made at all as to the relation
113 between the carrying capacity of those artificial ditches which is to increase the outlet capacity.

Q. I have already stated to you that I have assumed that the carrying capacity of the ditches was very much in excess of the natural carrying capacity of the natural outlet channel.

A. Yes.

Q. Now, what would be the effect in that ultimate outlet?

A. You would carry the water there faster.

Q. And by carrying the water there faster you would carry it there in greater volume, wouldn't you?

A. It would not follow.

Q. Do you know anything about the flood height that was reached in the flood of 1916 at the Mustinka outlet?

A. The Mustinka outlet?

Q. Yes, at Wheaton.

A. Only in so far as they are given in the record.

Q. That is, the record of this case?

A. Yes, sir.

Q. Do you know what the highest elevation is disclosed by the readings since the station was put in at Wheaton?

A. I do not recall what the highest gauge reading is, no.

Q. Do you know what the maximum discharge since that station was installed is?

A. I think I do.

Q. It was in April, 1917, wasn't it?

A. I think it was.

Q. 2,240 second feet?

A. I think that is correct.

114 Q. But you do not know the height, as I understand you, to which the crest reached at that time?

A. I don't recall the gauge height at that time.

Q. Mr. Meyer, suppose we had a lake located similarly, so far as its general physical layout is concerned, to Lake Traverse, and we had a ten inch rain storm, which you gentlemen call ten inches precipitation, in a single day, the outlet being the same as it always has been and is now, and we had another occasion where we had the same precipitation extended over ten days,—I am simply confining that question for the purpose of making a hypothetical case to the lake along,—assuming we could confine this rain storm, this precipitation, to the lake, what would be the effect upon the lake level at one time as against the other?

A. Allowing for the additional evaporation which would take place during the ten days the total amount of water which would fall on the lake would be less. The exact increase in lake level would depend upon the outflow during that period of time, and in my judgment the probabilities are that there would be a slightly higher lake level, due primarily to the greater inflow as the result of the ten inches of precipitation in a single day.

Q. In a single day?

A. Yes, sir.

Q. Now, I want to be sure that I understand you, Mr. Meyer, and that you understand me; I am not presupposing any inflow.

A. Precipitation on the surface is, of course, inflow.

Q. I simply called your attention to that to show that I wanted to exclude any other elements than that of precipitation; do I
115 make myself plain?

A. I am to assume there is to be no outflow at all?

A. No, sir, I do not conceive inflow and outflow is the same thing. I am assuming you will have the natural discharge which we have to-day.

A. That makes an impossible assumption because it assumes that the outflow would remain the same during that period, which of course is impossible.

Q. I make no such assumption. I assume that Lake Traverse is set in the ground.

A. Yes, sir.

Q. It is there. No dispute about that proposition?

A. No.

Q. I assume there is such a thing possible that we might have ten inches precipitation on that lake in one day?

A. Yes, sir.

Q. That is physically possible?

A. Yes, sir.

Q. I am assuming that you have a similar preciptation over a period of ten days.

A. Yes, sir.

Q. That also is possible?

A. Yes, sir.

Q. And I ask you which would produce the higher lake level?

A. You have made no reference to the condition of the outlet whatever.

Q. I want you to make that.

A. That would depend upon the relation between such an outflow, also the evaporation in the ten days would be considerably greater, so that the acual amount of water at the end of ten
116 days would be different from that which fell in 24 hours.

Q. I leave my question and ask you if you assumed that the level of the lake was 975 when the rain started?

A. Yes, sir.

Q. And I am assuming that the natural outlet, stood there just as the Almighty put it there and as it exists to-day. I am now asking if you have 10 inches precipitation in 24 hours or 10 inches precipitation over 10 days, which will produce the highest lake level, by that I mean crest?

A. In my judgment, without reference to the difference in total precipitation on account of the evaporation loss being greater, that all the computations that I have made indicate that the lake stage would not rise as high as the result of the more rapid or larger amount of water coming into the lake within a certain period of time. So far as any theoretical assumption is concerned I am not ready to say for one moment that I have gone through all the

possibilities or theoretical conditions of precipitation on the lake, considering no other factors, and I am not ready to state just what that effect would be. I am frank to say this, that this whole question of the relation between a certain amount of water coming in very suddenly or coming in gradually is new to me. The results of these computations were a surprise to me but I firmly believe that they represent an actual fact, just as I represented them. In the light of these computations I am unable to say that any theoretical assumption of this kind would result in the opposite effect
117 from that which I have found where I am considering a certain amount of water reaching the lake over more than a single day.

Q. Mr. Meyer, so that we may get something in regard to our elements so far as they will bear upon the computations you have made, what natural conditions obtaining would these computations that you have made cast doubt on your mind as to whether water would run down hill?

A. Not at all.

Q. So that we will, before leaving the proposition, be so we understand each other, I understand from your last answer and if I misquote you correct me, that you are unable to tell us as to whether or no, under the conditions I have supposed, there would be any higher lake level produced by the 24 hour precipitation than by the 10 day?

A. The theoretical assumption in my judgment involves so many things that I am unwilling to state.

Q. That is what I want. And then, if I understand you correctly, the accession in times of flood, which presupposes large accessions of waters from tributary areas into the drainage channels in relatively short spaces of time, does not tend to increase the crest?

A. I am absolutely satisfied that the ordinary natural inflow with the same amount of total run-off in each case into a lake results in a slightly lower flood crest than in the case of a more gradual inflow, because, as I stated before, it makes better use of the outlet
118 capacities while the lake is advancing.

Q. You have argued that quite fully, Mr. Meyer. Is there anything cryptic or supernatural or incomprehensible to the lay mind by your use of the term "crest"?

A. No, I don't think so.

Q. From that benighted, nonexpert position which most of the rest of us occupy, that word "crest" would signify a maximum elevation?

A. It would.

Q. And that is what I understand you to mean?

A. Yes.

Q. Suppose we had an inflow into a given outlet of 3,000 second feet over a period of ten days, the outlet being such a basin as Lake Traverse, and suppose we had the same inflow in the aggregate over a period of thirty days, what effect would it have upon the level of the lake?

A. The effect of the same amount of inflow where it comes in rapidly, assuming now that we are not considering instantaneous inflow, of a given amount of water and the continuation of exactly that rate for a given length of time, and then the instantaneous breaking off to zero, which is an unnatural condition, but assuming such conditions as would befall in nature, the given amount of water flowing into the lake within the ten days as against within the thirty days, depending upon the relation between that rate of inflow and the outlet capacity would result in a slightly lower lake stage.

119 Q. In which case?

A. In the case of the rapid inflow.

Q. In your direct examination you referred to the physical conditions existing in what we have termed the moraine zone, and as I understand you, your conclusions with reference to that was that the physical conditions tended to retard rather than facilitate run-off?

A. Ultimate run-off out of the moraine zone.

Q. And the reason that you gave for that was that owing to the topography of the country there were marshes and lakes that played the part of more or less temporary detaining basins?

A. Yes, sir.

Q. Now, what would have been the effect, under those conditions, if ditches had been constructed into the main channel from each of those marshes and little lakes or pools on the run-off?

A. From each of these marshes?

Q. Yes.

A. Upon the run-off with what respect, total?

Q. Just what my question indicates, into the main channel.

A. Considering the run-off both from the viewpoint of total volume and rate at which it would reach that point, the maximum rate of run-off from that watershed, it would depend first of all a great deal upon the size of the ditches that were dug. The water in cases of sudden heavy rains could be transported more rapidly and more readily through these ditches so as to be detained less long within these marshes and small ponds, depending upon the exact shape of the outlet of those; they might be able to function

120 very satisfactorily as detention basins for other portions of the run-off.

Q. Now, Mr. Meyer, would you kindly answer my question?

A. I have answered your question, in so far as certain phases of run-off are concerned. You left it open with me to decide as to which phase of run-off I was to consider.

Mr. Boutelle: Mr. Reporter, will you repeat my question?

(Question is read by the reporter, as follows: "What would have been the effect, under those conditions, if ditches had been constructed into the main channel from each of those marshes and little lakes or pools, on the run-off?")

A. Will you read my answer?

Q. No, I don't want that read.

A. If you will indicate what additional phases of run-off I am to consider that I did not consider in this answer, I would be glad to answer it very fully.

Q. You cannot answer any more than you have already answered?

The Witness: Will you kindly read my answer again for my benefit?

(Answer of witness, beginning "Considering the run-off" is read by the reporter.)

A. It is not a simple matter to sum up into one or two words the effect of such construction upon run-off, it depends upon such a variety of factors, unless the assumption is made very specific. I believe my answer covers the more rapid transportation during certain run-off conditions and the fact that the detaining
121 basin effect is not entirely removed under other conditions, depending upon the shape of the ditch to a large extent which is put in. The effect upon the total run-off would be determined very largely by the character of the soil, whether or not the land which was drained by those ditches, which was pond or marsh before, was put under cultivation and deeply plowed at certain seasons of the year. There are an almost infinite number of factors which have not been stated which affect the run-off, and if the question were made more specific I would be glad to answer more specifically concerning any particular phase of it.

Q. In your testimony you spoke of one of the assumed benefits from this project that you have suggested being the fact that it would permit the drainage of additional lands?

A. Yes, sir.

Q. What do you mean by that?

A. I meant by that that lands which are now sloping gradually to the area which is overflowed cannot be satisfactorily ditched because there is no outlet to which the ditches can be carried unless the channel of the Bois de Sioux River is enlarged.

Q. Then suppose we got this enlarged capacity by enlarging the channel of the Bois de Sioux and we dug those ditches?

A. Yes.

Q. What are the ditches going to do?

A. Probably cultivate the land.

Q. Did you ever see a ditch cultivate the land?

A. I say it would probably permit you to cultivate the land.

122 Q. What would the ditches do?

A. In what respect?

Q. That is what I am asking you.

A. I just stated that they would probably make that land tillable.

Q. And what would they do; would they carry water?

A. They would carry water, surely.

Q. Well, if they carry water and carry it from a wet area to an ultimate outlet, the amount that they would carry would depend

upon the volume of water that was to be drained off and the capacity of the ditches, would it not, very largely?

A. You are assuming a given amount of water up there or at the time.

Q. No, sir, I am assuming there is water up there.

A. Yes, you are assuming a certain amount of water up there.

Q. No certain amount of water. I am assuming there is water there that requires drainage to get rid of it and that you put in the ditches. What would become of the water up there under this complicated system you have worked out?

A. You assume water on there and you dig a ditch. At the moment that the water strikes the ditch, where the ditch stands, the water adjacent to the ditch will naturally run off down the ditch you have dug.

Q. If you have enough of those ditches tapping a large enough area, it is going to carry a great deal more water into the ultimate discharge channel than would ordinarily be carried in a
123 state of nature, isn't it?

A. That is an entirely different question.

Q. I am asking you that question. Can you answer that?

A. That would not necessarily follow.

Q. That would not necessarily follow? I think we will leave it there. Now, you spoke about water pressure underlying the Mustinka watershed and the running wells, and so forth?

A. Yes, sir.

Q. What is the depth of those wells?

A. I don't know the exact depth. There is every indication from the wells I saw there, that they were just small pipes driven into the ground a relatively short distance down.

Q. You don't know the depth?

A. I do not know the depth, no, sir. I could not measure it in any way.

Q. You say a short distance. That for a man of your habits of precision is rather indefinite from an engineering standpoint.

A. The indications were, from looking at the wells, that they were short pipes driven down, possibly varying with the different wells from ten to fifteen feet, and in the higher locations twenty-five to thirty feet.

Q. I understand that you do not undertake to testify as to the depth of these wells?

A. No, sir.

Q. That is a matter of conjecture or surmise on your part?

A. I would hardly say that it was entirely a matter of
124 conjecture or surmise. When one looks at a well you can get some impression from the structure itself that exists, whether it is likely to be a well that goes down to some considerable depth or not.

Q. Well, do you know, Mr. Meyer, whether these wells average, say, 25 feet or 100 feet, that is what I am trying to get at?

A. I do not know from any measurements, no.

Q. And would it make any difference in this underground water pressure there to which you have referred whether they were 80 or 100 feet deep?

A. I should say that it would make some difference, but the very fact of flowing wells through a drift formation would indicate that this drift or soil is under pressure from water underneath which has a tendency to get out, which is trying to find a way out.

Q. Then if I understand, your answer to that question is that it would make no difference whether it was 25 or 100?

A. I said it made some difference but I think it would not be a determining factor in so far as I have made any use of that assumption.

Q. Now I want to ask one or two question- in regard to those comparable areas. The factors entering into run-off are very numerous, are they not?

A. Yes, sir.

Q. And, to use the technical expression, they include a complex?

A. Yes.

125 Q. Of which precipitation is the chief?

A. Yes, sir.

Q. And the watershed area has some effect, has it not, water is a factor?

A. In what, may I ask?

Q. I am asking you. It is one of the factors entering into this problem?

A. Of run-off?

Q. Yes.

A. Yes, sir.

Q. Now, isn't it true, Mr. Meyer, that, taking two areas superficially appearing as comparative, that we may have the same showing with reference to run-off, covering a certain period of time, and yet the conditions of those two areas be entirely different?

A. That would depend upon the length of time and the periods over which you were comparing the run-off from those areas, and the precipitation and temperature causes that would affect the amount of run-off.

Q. Suppose you took two areas that you considered comparable and took a given result as the maximum in cubic second feet of run-off over the area and found they were identical, and on an examination you found that one of those areas had had a rain storm extending over two or three days with abnormal precipitation which the other had lacked, your results would just be guesswork, wouldn't they?

A. No, that necessarily depends again upon the length of time over which you are making your comparison.

126 Q. You have taken the Wild Rice watershed area as several thousand miles, as I understand, in your testimony?

A. About 2,000 odd square miles.

Q. You also testified you were familiar with Mr. Simons' report here?

A. In a general way, yes, sir.

Q. If I recall he takes that same watershed area as 800 square miles, doesn't he?

A. No, he takes it as 2,210, the North Dakota; the Wild Rice of Minnesota is about 800 square miles.

Q. The Minnesota is 800?

A. Yes, sir.

Q. Did you examine his figures with respect to run-off during 1909 of the Minnesota Wild Rice?

A. No, I did not make any detailed examination of that.

Q. If my memory serves me right, it shows there was 9,000 second feet. Did you ever hear of anything like that?

A. In this part of the territory, 9,000 cubic second feet from that drainage area. Yes, that is as I recall about the flow from the Minnesota Wild Rice from that particular condition.

Q. And you say that is a flow that is not at all out of the what we might call average?

A. No, I made no such statement. I certainly made no such statement to the record.

Q. As a matter of fact, there never was any such run-off known in this area outside of that particular date?

A. There was neither such rainfall or run-off in that area
127 during the time we have records.

Q. That was due to a sudden cloudburst or something in which there was something like ten inches of precipitation over a given length of time?

A. Yes, sir.

Q. But that sudden precipitation over that length of time did increase the run-off?

A. Yes, sir.

Q. And presumably increased the level of the receptacle of that precipitation?

A. Over what it would have been if there had been no run-off.

Q. Over what it woud have been if there had not been such precipitation?

A. It might.

Q. Or if that precipitation would have extended over a month?

A. If the precipitation had extended over a month?

Q. Yes, sir, instead of a day?

A. Yes, sir, certainly; assuming the same watershed area and all other conditions the same it would have yielded less.

Q. In answering your questions with reference to the project as proposed by the complainant's witnesses here, Dean Shenehon and Professor Chandler, as I understand one of the objections that you made to that project was that the earth dyke or dam might be washed out in high water stages?

A. Yes, sir, there is a possibility of that, with the other conditions as they indicated.

128 Q. The earth dyke or dam woud be not essentially different from the filling of a railroad grade or road grade, would it?

A. In a general way, no.

Q. And there were such cross roads and railroad there in that valley in 1915 and 1916, at the time of those floods?

A. There were roads crossing the valley, yes, sir.

Q. Do you know the maximum level that Lake Traverse reached in the 1915 and 1916 floods other than as by hearsay?

A. Only as in the record.

Q. Do you know how much the flood in either one of those years washed out any of those dykes to which I have called your attention?

A. Not from personal observation.

Q. If it should be disclosed by the facts that there was no appreciable washing out under those conditions, would you have reason to assume there would be any more washing out of this dyke as now proposed?

A. In the washing out of these roads?

Q. Yes.

A. I would say that if the dyke itself washed out, there probably wouldn't be on account of the more rapid increase——

Q. That is not my question.

(Question is read by the reporter.)

A. Any more washing out of this dyke than the roads? Excuse me, I evidently misinterpreted your question. Only so far as I have stated that in my judgment the spillway capacity at about 75.5 to 76 is less than in a state of nature and that the lake would
129 rise, in an extreme flood would possibly rise a little higher, and as a result of that, the wave wash with the higher stage might result in washing out this embankment, which has a free-board of only two feet.

Q. Isn't that rather a theoretical assumption, Mr. Meyer?

A. Well, I wouldn't call it exactly a theoretical assumption; the free-board is only two feet, as I stated.

Q. How much lower do you assume that the water will be on the down-stream side of the dyke than on the up-stream at this level that you assumed in your last answer?

A. I have not assumed any exact difference in level, but that would depend, of course, upon the total length of the spillway provided at the 976 level. But it seemed to me that with the possibility of very heavy inflow raising the lake rapidly at that point, where the outflow capacity in my judgment was relatively small, that the lake rising rapidly would pour out its water at a stage probably near the top of the main dyke and the least wave wash would start the water going over, and it would seem to me that it was not a matter of remote conjecture that the lake would rise to that stage and wash out the dyke.

Q. How much in these computations do you figure for the outlet capacity of the sluices?

A. The outlet capacity of the sluices I judged at an elevation of about 76 to be in the neighborhood of 400, 450, as I recall it, or 500 second feet. It was a matter of judgment but it seemed to me

that the dyke ought to be higher if the water was never
130 to be permitted to flow over in the case of an extreme flood.
In my judgment the channel below the dam is considerably larger than the natural channel and the discharging capacity of the control works is less, in my judgment, than the natural discharge capacity at that critical stage and for that reason the fall would be greater at that point than under natural conditions.

Q. What did you assume the discharge capacity?

A. Somewhere in the neighborhood of 400 to 500.

Q. Then what do you assume would be the level of the water with that discharge below the dam or dyke?

A. That is the discharging capacity with very little fall through the control works themselves. It would be a matter of a small fall through the control works themselves to produce that velocity.

Q. Now, Mr. Meyer, what is the area of these sluiceways at elevation 976?

A. 240 square feet.

Q. And then, how many second feet of discharge going through that area do you assume?

A. About 400 or 500 second feet.

Q. Now, what would the drop below the dyke be under those circumstances?

A. The drop would be very small.

Q. What would it be in inches?

A. I am not familiar with the detail but it would be a very small amount. The actual fall would be a very small amount, a matter of an inch or two at *out* outside, an inch possibly would be sufficient at that discharge.

131 Q. Then how much wash would you get with an inch difference in the level on one side of the dyke from what it was on the other?

A. I would not expect to get any wash, so far as that difference in level is concerned, to amount to anything.

Q. Under those conditions?

A. No, sir. I referred to wave wash at the high stage, when I said the lake might rise up during an exceptional inflow to a high stage. I do not want to magnify or leave the impression that I would magnify that as a possibility. I stated that in my judgment with the length of the spillway itself indefinite and the dyke itself being an earth dyke only, two feet above the spillway gates, that there was not a large factor of safety there, and that there was a possibility, it seemed to me, of a very enlarged inflow which, together with the wave action, might result in washing out portions of the dyke which would cause the water to come down faster than it would under natural conditions.

Q. Do you think there would be any appreciable difference under these conditions from what it was in the floods with reference to those road grades?

A. So far as——

Q. Washing out is concerned?

A. No, I do not consider it would be materially different.

Q. So that if the road grades were affected the same would be true of this dyke?

A. I do not conceive of this dyke as being better than road surface and if there was washing over it that it would wash more
132 readily than a road would.

ARTHUR E. MORGAN, being first duly sworn in behalf of defendant, testified as follows:

Examined by Mr. Brown:

Q. What is your name?

A. Arthur E. Morgan.

Q. Where do you reside?

A. Yellow Springs, Ohio.

Q. Is that also your place of business?

A. Place of business is Dayton, Ohio; Yellow Springs is a suburb of Dayton.

Q. Are you connected with some educational institution at the place at which you reside?

A. I am president of Antioch College. My business organization is the Morgan Engineering Company, of which I am president, Dayton Engineering Company.

Q. The main office of that concern is at Dayton, Ohio?

A. We also have an office at Memphis, Tennessee, and other offices.

Q. What kind of an engineer are you?

A. I am hydraulic and flood control engineer.

Q. How long have you been engaged as such engineer?

A. About 20 years.

Q. On what works have you been engaged since starting your work as a hydraulic and flood control engineer?

A. Some of the first work that I did was in Minnesota, in planning relief from overflow and floods of various streams in this state.
133 Those included the upper courses of Clear Water River, Crow River, Rice River in Lincoln County, and along Prairie River, Sauk River and the Mustinka River and various other streams, and in the southern states the reclamation and control of overflowed lands in Texas, Louisiana, Arkansas, Missouri, Tennessee, Mississippi and Florida. Those in the aggregate I have had under my direction that has resulted in the construction of various retarding basins, and perhaps 500 miles of levees, perhaps 3,000 miles of canals, and it included the reclamation of, at a rough guess, I should say, 2,000,000 acres of overflow lands. Then in——

Q. Just give a rough estimate of the cost of those projects?

A. Then in Ohio I have been in charge, as chief engineer and in charge of construction, of flood control works on the Miami River and its tributaries, on the upper Scioto River, and I am now in charge in Colorado of some work for the protection of the City of Pueblo from floods on the Arkansas River. During that period that I have mentioned I have been in charge of somewhere between seventy-five and one hundred reclamation and flood control problems,

of a total cost of possibly $75,000,000, of which, however, one project, that in Ohio, represents almost half in money.

Q. What occasioned the installation of the projects in Ohio to which you have called attention?

A. Heavy rainfall resulting in the overflow of rivers and the loss of life and property.

Q. In what portion of Ohio?

134 A. In connection with one of these projects in the Miami valley in southwestern Ohio, in the cities of Piqua, Troy, Dayton, Hamilton, Middletown, and other cities along the Miami River and its tributaries.

Q. Were those the floods of 1913?

A. Yes, sir.

Q. And what occasioned your employment in Colorado and work there?

A. My employment there was occasioned by the flood of 1921. It destroyed part of the City of Pueblo and other cities in the Arkansas River valley.

Q. Have you been in governmental service in Ohio and are you in governmental service in Colorado?

A. I am in public service, in local governmental service, not Federal government.

Q. That is what I mean.

A. I spent about three years in the service of the Federal government in what was then called the Department of Drainage Investigations. It is the same organization that produced this Bulletin No. 1017 on the control of the Red River. I was supervising engineer in charge of various of their projects.

Q. Those various projects to which you called attention have been installed by either states or local subdivisions of state?

A. A few by states, mostly by improvement districts organized for the particular purpose.

Q. When were you employed in this particular matter by the State of Minnesota, about when?

135 A. As I recall, the latter part of 1921. My memory may be at fault there, but I think it is right.

Q. Since then have you read and studied and given considerable consideration to the record in this case, that is, the record of the evidence and testimony taken at prior hearings?

A. I have personally gone through a large portion of the record and then I have had assistance in the office also in checking up my own computations, my own analyses.

Q. You consider yourself to be familiar with this record, do you not?

A. I consider myself generally familiar with it. I have tried to read those parts which had some significance. I have not read the whole record.

Q. You have read such portions of the record as might have a bearing on the projects suggested by the Court in its order, have you not?

A. Yes, sir. I would not say that I read every bit that threw light on it but I have tried to read the significant parts.

Q. I believe you stated that you had done some work in the Mustinka watershed in times past, is that true?

A. Yes, sir, I have worked in that territory on several different occasions. Once in 1906 or 1907—I forget whether it was the fall of 1906 or the spring of 1907—I made a survey of the Mustinka River through Grant County for Grant County to determine whether it was feasible to improve the river channel by enlarging it.

136 Q. What conclusion did you reach as the result of your work?

A. I reported to the Commissioners of Grant County at that time that there was so little land subject to overflow on the Mustinka River within what is called the moraine zone that its reclamation would not be profitabe, that the land overflowed that would be reclaimed would be so small as not to be profitable.

Q. When was this work done?

A. And the improvement was then abandoned on my recommendation.

Q. When was this work done?

A. I forget whether it was late in 1906 or early in 1907.

Q. How much time did you spend on that work?

A. I spent some months in Grant County altogether. On this particular survey my surveying parties did part of the work but I went over the ground for not more than a week in an examination of the situation.

Q. Have you gone over the other portion of the Mustinka watershed and also the Lake Traverse-Bois de Sioux watershed preparatory to giving testimony in this matter?

A. Yes, I have gone over a considerable part of the Mustinka watershed and over the Bois de Sioux watershed. I also did work for Grant County in reporting to them on the feasibility of reclaiming some of those small depressions in what we call the moraine zone, but recently I have gone over both areas for the purposes of this case.

Q. Calling your attention to the order of the Court pursuant to which we are taking testimony, I will ask you whether you

137 have a copy of that order before you?

A. Yes.

Q. The Court there calls for the taking of testimony of expert witnesses by each of the states, North Dakota and Minnesota, relative to the feasibility of doing away with or ameliorating flood conditions along the Bois de Sioux River by means of various projects which are designated in the order as "*a*," "*b*," "*c*," "*d*" and "*e*." I will ask you whether or not the project suggested by "*a*" is, in your opinion, a feasible one?

A. I made a careful study and cost estimates on that project. It is not feasible because the cost of holding back water there on the upper watershed of the Mustinka would be about five times as much per unit of storage as would be the cost of holding it back in Lake Traverse, and there it would be less effective because a rain storm might come on some other part of the watershed where it would be

controlled by Lake Traverse but would not be controlled by drainage on the Mustinka.

Q. What do you say about the feasibility of the project suggested by *"b?"*

A. I think that the construction of a dam in Lake Traverse is most effective when combined with other construction and not as a project of itself.

Q. You do not consider, then, the construction of a dam in Lake Traverse, standing alone, a feasible or practical undertaking?

A. Compared with other possibilities it is not feasible; if
138 there were no other possibilities it would be.

Q. What have you to say with reference to the feasibility of the project suggested by *"d"* in the order?

A. I consider that Big Stone Lake and the Minnesota River have their own flood problems, which ought not to be aggravated by diverting water from Lake Traverse into Big Stone Lake.

Q. With reference to the feasibility of the project suggested by *"c"* of the order, what have you to say?

A. I consider that the diverting of water from the Mustinka River to the Rabbit River would aggravate conditions rather than help them, on the whole.

Q. Just give your reasons briefly for that conclusion.

A. The reason is that water coming down the Mustinka River is controled and regulated in passing through Lake Traverse. If it were sent down the Rabbit River it would at once overflow land because there would be no regulating basin effect to pass through and the danger would therefore be greater.

Q. Do you think that a plan could be worked out in accordance with the methods suggested by *"c"* of the order and that such a plan would result in doing away with or ameliorating the flood conditions along the Bois de Sioux River?

A. Yes.

Q. I call your attention to Buletin No. 1017, heretofore referred to by the various witnesses. Have you given that bulletin some consideration?

A. Yes.

139 Q. Briefly and in a general way, what suggestion is made in that bulletin relative to doing away with flood conditions along the Bois de Sioux River?

Mr. Boutelle: I suppose the bulletin speaks for itself.

Mr. Brown: Yes, it certainly does.

A. The recommendation is made that a dam be constructed across the outlet of Lake Traverse and that the channel of the Bois de Sioux River be enlarged.

Q. Is a dyke suggested above Brown Valley?

A. Yes, and that a dyke be built to prevent the overflow of water from Lake Traverse into Big Stone Lake.

Q. And it is suggested also that ditches be constructed in the Bois de Sioux valley?

A. Yes, that ditches be constructed in the overflow lands below the dam in the Lake Traverse to reclaim the lands adjacent to the Bois de Sioux River.

Q. Have you given the plan suggested by Bulletin No. 1017 sufficient study to enable you to say whether or not it is feasible from an engineering standpoint?

A. From a construction point of view it is entirely feasible. It would accomplish the results expected of it.

Q. In other words, in your opinion, the project if carried out would do away with flood conditions in the Bois de Sioux valley?

A. Yes.

Q. Do you consider it advisable or necessary to carry through a project of this magnitude at this time in order to relieve the
140 lands in the Bois de Sioux valley from flood?

A. I believe it would be inadvisable to carry through that project as outlined.

Q. Will you state briefly your reasons for that?

A. The degree to which flood protection can be carried depends largely upon the interests at stake, upon the value of lands and upon the desire for relief. I believe that to carry through the entire project as outlined in Bulletin 1017 would put an unduly heavy burden upon the lands affected and would not be an economically sound undertaking at the present time because the returns from the reclaimed lands would not justify so great an expense.

Q. This bulletin has reference to improvements in the Red River valley nearly to the Canadian boundary line, has it not?

A. Yes, sir. I was referring, however, only to the part that relates to the Bois de Sioux River.

Q. Have you given the bulletin sufficient consideration to be able to state whether or not the project suggested for the Bois de Sioux valley may be considered and carried out independent of the projects suggested for the balance of the watershed?

A. Yes, it can be carried through entirely independent of the larger project.

Q. And if carried through it will not have a detrimental effect upon the lands to the north of the point at which the project is supposed to end?

A. I believe not. I am not able to say how the balance would be. In some cases it would be decidedly beneficial to the
141 lands above. There might be some cases in which the balance would be the other way but it is so slight as not to affect the situation practically.

Q. Are you of opinion that some project can be constructed in the Lake Traverse-Bois de Sioux region which if installed would do away with or ameliorate flood conditions in the Bois de Sioux valley?

A. Yes.

Q. Have you considered such a project?

A. Yes.

Q. Just what sort of a project, Mr. Morgan, would you recommend?

A. I would recommend a project in general along the lines of that recommended in Bulletin 1017 but carried only to the extent that

would be justified by the present values of lands and interests at stake, but which would be susceptible to further development without material loss of investment if in the future the increase of land values and increase of interests should lead the communities affected to desire to carry the project further.

Q. What improvements do you have in mind?

A. I believe that an improvement costing between $400,000 and $500,000, and perhaps somewhat more than that, would be justified at the present time; that that improvement should consist of a channel enlargement of the Bois de Sioux River, extending from a bottom elevation of about 965 in Lake Traverse, thence down-stream to a point about ten miles below the outlet of Rabbit River,

down-stream from the outlet of the Rabbit River; that the
142 capacity of this channel from Lake Traverse to the outlet of the Rabbit River is recommended to be 700 cubic feet per second at bank full stage, and from the mouth of Rabbit River north 1,000 cubic feet per second at bank full stage. In addition to the construction of this channel, which would cost about $225,000, it would be necessary to replace highway bridges at an expense of about $15,000 and to pay damages for the cutting of the ditch to an extent of perhaps $25,000. Then I would recommend building a dam across Lake Traverse to an elevation of about 978, with a spillway elevation of about 974. There is a large flat area at the dam site at about elevation of 973 to 975, which would form a natural spillway and would prevent danger to the floor of the dam. The top of the dam might possibly be 980; it should be well above the spillway elevation.

Q. Where do you propose to locate this dam?

A. At approximately the location indicated in Bulletin 1017. The exact location could be determined after a careful examination of the ground to determine where the best foundation would be. It would be an earth dam and through the earth dam and cut in the earth dam would be a concrete structure of the outlets. Those outlets would have a capacity of about 700 cubic feet per second, with an elevation not more than about one foot, which would give then a cross-section of probably a little over 100 square feet. Possibly 200 square feet would be more effective.

Q. What sort of control do you suggest with reference to your outlet works?

143 A. The outlets would be controlled by gates which would be operated by hand.

Q. What would be the cost of that?

A. The cost of the dam and gates, etc., would be not to exceed $100,000. Then there would be possibly $50,000 of contingent expenses, more or less. So there would be somewhere in the neighborhood of $400,000. I should say that $40,000 would be nearer right for contingencies.

Q. How will this project operate as a preventive of floods in the Bois de Sioux valley?

A. It would operate by releasing a part of the water in Lake Traverse during the winter, making the area of the lake above an

elevation of 970 available for storage. That, in addition to a capacity of about 700 cubic feet per second in the channel below, would effectively take care of approximately such a condition as obtained in 1916.

Now, the question of just how far to go in the extent of that improvement is not to be determined until a carful examination can be made of the interests involved. That will depend on the number of acres affected, upon the extent of the effect upon those acres, and upon the value of the property, of the lands, at the time that improvement is carried out. Since this suit was commenced I think that land values in that general territory have increased possibly 50 per cent and then in the last two years they have decreased again with the general shrinkage of land values. If land values are high their re-
144 clamation justifies a greater expenditure. An expenditure of possibly $400,000 would be perhaps the most profitable. On more than that you would be getting diminishing returns and the exact place to stop in that area is somewhat indefinite. It would have to depend upon a careful appraisal of the results of that improvement and the prevailing values at that time, and it could only be determined by a very careful analysis of the situation.

Q. Do you propose to raise the level of Lake Traverse at all?

A. Not above what it would be under similar conditions in a state of nature, under similar climatic and flow conditions in a state of nature. In fact, it might be reduced possibly a foot in the case of a spring like 1913, possibly a foot below what it would be in a state of nature.

Q. 1913?

A. 1916.

Q. You do not figure then that there will be any flowage rights along Lake Traverse to take care of in installing such a project as this?

A. I consider not.

Q. And what effect will the installation of your project have on navigation interests in Lake Traverse?

A. That I am not entirely certain about. It would have a different effect in one year than it would in another. There might be some years when the effect would be unfavorable; there would be other years when it would be distinctly favorable. As to how the balance would lie I do not know, but I am quite certain it would be immaterial from a financial standpoint.

Q. How would you suggest operating this project during
145 spring run-offs?

A. As soon as the navigation season is closed in the fall, when there is ice on the lake, the gates should be opened to the full capacity of the channel outlets and the lake allowed to empty to an elevation of 970 and kept at that elevation until the water from melting snow had passed in the spring. Then it should be raised to about ordinary low water stage, say about 972, and held there during the summer. It would take some practice to know how to regulate that. We do not know how much seepage there is in the

lake that would affect it. That would be a matter of experience to determine.

Q. I believe you stated that the project you suggest in your opinion would have prevented all conditions which occurred in the Bois de Sioux valley in 1916, is that true?

A. Yes, so far as those conditions were due to any flooding from Lake Traverse and so far as they would be affected by an enlargement of the Bois de Sioux River. There are some wet areas along there that would have to have additional drainage for their reclamation regardless of any outlet. In fact, that is true of a considerable portion of the area but there is a very great area there that would require additional ditching to make its condition of cultivation the best.

Q. I believe you stated that the project you suggest is one which may be enlarged in the future, if occasion should require?

A. Yes, it can be enlarged with practically no loss of investment.

146 Q. Have you considered, Mr. Morgan, a basis for the equitable apportionment of the expense which would be incurred in constructing a project such as you have suggested among the states drained by the Lake Traverse and Bois de Sioux watershed, taking into account, among other considerations, the amount of water discharged by each state into Lake Traverse and the Bois de Sioux River and the benefit conferred by the improvement?

A. Yes, sir.

Q. Considering first the apportionment of the expenses on the basis of benefits conferred, I will ask you to state what lands you figure will be benefited by the project you suggest?

A. The exact distribution of those benefits would be a matter of careful appraisal. In general about two-thirds of the total benefits would fall to North Dakota, well, somewhere between two-thirds and three-quarters to North Dakota. Of the remainder somewhat over half to Minnesota and somewhat less than half to South Dakota.

Q. Have you made any estimate with reference to acreage which will be benefited in the various states involved?

A. Yes.

Q. Will you give us your estimate of the acreage which will be benefited situated in the State of N. Dakota and follow that with South Dakota and Minnesota?

A. The area actually flooded in North Dakota, which it would seem proper to assess quite heavily for such an improvement is about 12,000. There is some land in North Dakota that is flooded

147 but where it would be a question as to the propriety of appraising it because of its distance from the outlet in the Bois de Sioux River. In Minnesota about 3,000 acres is flooded and similarly situated and a more limited area flooded but so far down the river as to be slightly affected. In South Dakota about 3,000 acres is the land that was flooded outside the actual flood line but still flat, low-lying land that has inadequate outlet and would be benefited by having an outlet furnished. There is about 25,000 acres altogether, of which approximately 20,000 acres would be in North Dakota,

5,000 in Minnesota, and a very few hundred acres in South Dakota. Those estimates are not precise, they are generally accurate.

Q. Assuming that the entire cost is to be met by assessing the lands to be benefited, give us your estimate of the assessments which should be borne by the two classes of lands to which you have called attention; namely, the lands subject to floods and which would be reclaimed from floods and the lands which would be given an outlet for drainage.

A. I should say there are between 15,000 and 20,000 acres, possibly 18,000 acres flooded that might bear an assessment of $15 an acre, or a total assessment of $270,000. That might vary anywhere from $250,000 to $325,000, however. It would take a careful appraisal to get the precise data. There would be about 25,000 acres on which possible $5 an acre would be a reasonable assessment. That probably would vary from $10 an acre to nothing, depending upon the location of the land. That would represent about
148 $125,000. Then there would be a certain benefit to roads, railroads, villages and possibly to other property, amounting to possibly $50,000.

Q. In your judgment do these figures fairly represent the benefits that would accrue to the lands referred to?

A. I think that is a reasonable estimate. Those figures are at best estimates because they fluctuate as the value of the land fluctuates and as the pressure of the population for more land varies, and only a careful appraisal of the situation would bring precise or anything like precise figures.

Q. What have you in mind when you refer to the benefits to any particular tract of land?

A. I have in mind the difference in the value of that tract of land with protection and without protection, that margin or difference that is added to it by protection is the benefit to that tract. That benefit ought to exceed the actual cost because nobody wants to pay the entire value to him of a piece of land when he buys it, so there ought to be a margin. I consider that the figures I have given do not represent the benefit to the lands. They represent a reasonable estimate of the distribution of the cost in proportion to the benefits but not equal to the benefits. There must be a margin of profit or the project is not economically feasible. As to the actual benefits, much of this land that is now worth $10 an acre would be worth $50, a benefit of perhaps $40 an acre instead of $15, but that margin must be there to make the project feasible.

149 Q. Due to the fact that I may have occasion to refer to Complainant's Exhibit A, introduced and used in the hearings heretofore in this case, I call your attention to that exhibit at this time and ask you if you are familiar with the same?

A. I am.

Q. Now, with reference to apportioning the cost of the project you suggest on the basis of the amount of water contributed by each of the three states, Minnesota, North Dakota and South Dakota, to the floods which occur along the Bois de Sioux River, I will ask you whether you have given that matter any consideration?

A. I have.

Q. I will ask you whether or not you have given any consideration to the question as to whether the Mustinka Ditch and other ditches constructed in the Mustinka watershed have increased the run-off as compared with the run-off in a state of nature?

A. Yes, sir.

Q. Now, will you state in your own way, Mr. Morgan, what you have taken into consideration in that matter and explain the same in some detail?

Mr. Boutelle: Now this question and all questions bearing upon the same subject matter are objected to as involving an attempt to reopen the issues and retry the issues of the main case, and as not within the scope of the questions propounded by the Supreme Court and as incompetent, immaterial and irrelevant accordingly. I assume that my same objection may be taken as applying to
150 this entire line of examination so as not to interrupt.

Mr. Brown: It may.

A. In considering the order of the Court that evidence be taken concerning the proper equitable basis for apportioning the expenses of any feasible project among the states drained by the Lake Traverse-Bois de Sioux watershed, taking into account, among other considerations, the amount of water discharged by each state into Lake Traverse or the Bois de Sioux River and the benefit conferred by the improvement, it was to the point to consider the cause of the floods and of the overflows along the Bois de Sioux River. I made myself familiar with the situation for the purpose of having an opinion as to why these lands overflow and whether any artificial construction had increased or affected that overflow. I think it would be to the point to indicate generally the nature of this area and why it overflows.

Q. To what area are you referring?

A. The watershed of the Bois de Sioux River, and why it produced overflow,—or am I getting away from my question?

Q. My question was limited at this time to this, whether or not the Mustinka Ditch and ditches constructed in connection therewith in the Mustinka watershed have increased the run-off from that watershed over and above the run-off which would take place in a state of nature?

A. If the Mustinka ditches have increased such run-off to any extent whatever then the increase was to such a very minor ex-
151 tent that that increase is a totally negligible element in the flood situation.

Q. Now, that is your opinion and conclusion. I would like to have you detail facts and circumstances which bring about the expression of such an opinion.

A. A large area surrounding Lake Traverse composes what is known as the bed of Lake Agassiz. It is evidently the remains of an old lake. In some places the beach of that lake is very plainly in evidence. Its rim is in the shape of a saucer, that is, it is sloping at the edges but approximately flat at the bottom. Lake Traverse is the residual remains of a lake that was once of very much greater extent. That lake has been gradually disappearing, although this

disappearance has been sometimes interrupted. It probably would have entirely disappeared but for the fact that the Minnesota River brought down debris or deposits that cut off its outlet. Similarly the Mustinka River in prehistoric times has built out a flat across Lake Traverse and divided it practically into two lakes. Except for those deposits, the general tendency has been for this lake to decrease in size, and is indicated in the general topography and formation of that country. Thns decrease has been gradually extending over hundreds of years, but it is not uniform. It is similar to very many lakes in western Minnesota, they are to a greater or less extent intermittent. I have personally surveyed and examined thirty or forty lakes, at least, in western Minnesota that are entirely dry in excessively dry years and then are full and overflowing during wet years.
152 These dry years and wet years do not occur with any regularity or consistency. Sometimes several dry years follow each other and sometimes several wet years follow each other. The extreme range can be indicated by the fact that here at St. Paul the annual rainfall has ranged from about 10 inches to over 45 inches, the highest annual rainfall being more than four times as mich as the lowest annual rainfall. During dry years these lakes shrink in size and farmers cultivate further into the lake bottoms. In hundreds of cases the entire lake bottom is cultivated and good crops are raised in western Minnesota during dry years. Then wet years occur when the lake is full to overflowing. At such times there is a natural feeling on the part of the farmers that they have acquired a decided interest in this intermittent lake bed and there is always great activity for the draining of these lakes and for the recovery of damages from this harm done during wet years.

Mr. Boutelle: Just a moment, I am going to interpose an objection to this line of answer as to what farmers conceive to be their rights. I believe that the Supreme Court is sufficiently able to determine what the real rights are without any assistance on the part of the witness, and I move to strike out the last part of the answer as immaterial and cumbering the record.

A. These observations were based on my personal surveys of the entire area here, where the lakes did disappear in dry seasons and appeared again in wet years, and if we have a wet season that activity is very general; that is a very common occurrence. In this
153 intermittent bed of Lake Traverse there is a great deal of land that is sometimes above water and sometimes under water. In wet years it cannot be cultivated, in dry years it can be cultivated. Some of it is so near low water level that it can be cultivated only once in many years; some of it so high that it is overflowed only once in many years, and there are all stages between. There always have been such variations, so far as we know. So that this variation of level in Lake Traverse is a natural occurrence which has existed as far back as we have any knowledge.

Lake Traverse itself is a true retarding basin. It is surrounded by higher land, with only the inadequate channel of the Bois de Sioux River as an outlet. It is not entirely surrounded by a high

rim but surrounded about 95 or 98 per cent by such a rim, possibly 95 per cent surrounded by such a rim, and in the area not so surrounded the land is so very flat as to not furnish an outlet. The Delta Zone of the Mustinka River, on the other hand, is an entirely different formation or has entirely different formation. An examination of Complainants Exhibit A in the original case shows this fact very distinctly. The contour lines across the territory which it is claimed is a retarding basin run in fairly nearly straight lines. That is, it is a fairly curved slope, with nothing whatever in the nature of a rim around it, absolutely nothing in the nature of a rim around it.

It is a sloping prairie with a fall of about five feet to the mile.

That fall is greater than the general slope, surface slope, over.
154 say, half of the farm land of Illinois. It is a greater surface slope than exists almost anywhere in the rich farm lands of Arkansas, Missouri or Mississippi. It is a slope which in general would be adequate for drainage. The difference between this territory with a slope of five feet to the mile and Illinois and Ohio farm lands with the same slope is that this land in the moraine zone is fairly uniform. It has not the little local variations of small ridges and hollows.

Mr. Brown:

Q. You mean the moraine zone?

A. The Delta Zone, pardon me. The surface of this Delta Zone has a general pitch of five feet to the mile but is lacking in many of the little surface irregularities of a foot or more which are common in Illinois and other rich argricultural regions. So that, while the water travels across that country, it does so without gathering so much into little brooks and rivulets as it does in some territories. It is not in any sense whatever a retarding basin. The water on its surface is purely surface water. Mr. Shenehon testified in the former case that the water over that so-called retarding basin would be from 1/6 of an inch to two or three inches deep. A depth of water from 1/6 of an inch to two or three inches deep is purely surface water. That difference or variation may occur in almost any flat place, the little irregularities of almost any farm surface would be as great as that.

If that statement is correct as to the depth of that water then it could not have backed up more than—if there was any place
155 where there was a rim the water would not have backed up back of that rim more than two or three feet to five feet deep. In fact, it has none of the characteristics of a retarding basin but it has all the characteristics of sloping, flat, prairie land. I could find no evidence, either on the ground or in the testimony, which indicates that this ever was a retarding basin.

Now, the so-called moraine zone of the Mustinka River, being the upper area of the watershed, is of an entirely different character. It lies very much higher and is a succession of hills and hollows and ridges. There are a vast number of little pot holes and swales that

have no drainage at all. I have been over that ground very thoroughly. I know that comparatively little ditching has been done. The farmers have drained their little pot holes out, one to the other, but outside of that there has been practically no ditching in the moraine zone. There have been a few small ditches. That moraine zone consists of a surface layer of clay underlain by a bed of gravel. Some years ago in that territory which is just east of Elbow Lake on this Exhibit A, which is indicated as sections 1 and 2, 35 and 36, 4 and 12, just northeast of Elbow Lake, I constructed several miles of ditch through its surface of clay soil, and found an outlet by digging a hole about three feet into the gravel, and that whole area of about four and a half miles has drained since that time into the gravel without any overflow whatever.

That is an indication of the nature of that soil. This water seeps down into the bed of gravel and then flows toward Lake Trav-
156 erse and tends to make that land more or less springy. As Mr. Meyer indicated it also brings some of the water to Lake Traverse by seepage. Hence the flow through the Mustinka River is the natural flow, plus a certain concentration of purely surface water.

I believe it is possible that that surface water has, to a small extent, added to the speed with which the water reaches Lake Traverse, and it may have added, to a small extent, to the total amount of water running off; that is, during the spring break-up, if that water had run off a little more slowly a little more would have evaporated, that is about the total difference. So far as flowing into Lake Traverse rapidly is concerned, I think that Mr. Meyer is exactly right in saying that a more rapid inflow would result in a lower crest stage of Lake Traverse. In my work in flood control I very many times had to work out the most economical size and shape of retarding basins, and it generally works out that a retarding basin is more heavily taxed by a long drawn out storm and inflow than it is by the same inflow coming at a shorter period. That is the result I have found over and over and over again by working out the actual behavior of a retarding basin.

The reason for that is this, that the crest does not occur,—for instance, here at Lake Traverse, the crest at Lake Traverse does not occur when the crest occurs on the Mustinka River. The lake commences to rise long after the crest has occurred on the river; until the outflow is greater than the inflow, that may be a varying
157 length of time, the lake continues to rise and keeps on rising until the outflow is greater than the inflow. If all of that water could be put in in a short time, the outlet is at a higher stage during that entire time. You are getting more inflow and maximum outflow when the lake is filling rapidly than when it is filling slowly. We have worked out cases over and over again and it works out that a comparatively rapid inflow into a reservoir or retarding basin that brings your outlet into operation quicker will result in a lower crest in your basin, than in a case where the same amount of water flows in slowly. That is thoroughly proven by both the probable behavior of theoretical basins and such actual basins upon which figures can

be secured. If you will put your water in there, all of it, without any reference or thought of the amount of the maximum crest but that your water inflow comes in gradually until the crest occurs and then there is a gradual tailing of the inflow in that basin while the basin is still rising, it is when the flow has gone down to a third or half of the maximum that your flow reaches its crest. If you can put the larger part of the water in quicker you are going to have better use of your outlet and a lower maximum stage; so that the acceleration of this water into Lake Traverse would be a definite benefit and not a damage. If any additional water should come in that would tend to be a damage, but I believe that is but a small item.

Furthermore, there is another way in which the acceleration of that water into Lake Traverse is a benefit. Most of these
158 floods occur in the early spring. When that water comes into Lake Traverse quickly when the snow melts and gets out again it may be gotten out of the way in time to allow crops to be planted, whereas if it comes ten days later it may interfere with planting.

I have calculated very carefully how far up-stream and away from these ditches the flow would be affected in the Mustinka River. The effect of those ditches would be entirely lost within two miles up-stream; on the Twelve Mile Creek the effect of the ditches would be entirely lost from three to four miles up-stream. You can visualize that by considering rapids in a river. They will lower the water for a little distance up-stream until the friction is overcome and then the effect disappears. We have had to work that in many cases, in case of cut-offs on river banks, and our estimates there are not rough estimates, they are fairly exact estimates; so that only a small part of the watershed of the Mustinka River is affected by this Mustinka and the other ditches.

Q. I intended to ask you as to the effect of these ditches with reference to the acceleration of the run-off, but you have covered that in your answer to my question relative to the volume of run-off. Now, to summarize what you have said as the result of your consideration of the various physical features and other features in connection with the watersheds involved, what is your opinion with reference to whether or not the Mustinka Ditch and other ditches con-
159 structed there increase the run-off into Lake Traverse?

A. I think that they probably increase the run-off but to such a very small extent that it could not be appreciable.

Q. To summarize also with respect to the acceleration of flow, what would you say as to the acceleration of flow?

A. The acceleration of flow, in so far as it is a fact, would be a benefit, but it is also very slight. As to the land affected by any increase, should I cover that in the same question?

Q. I do not think we need to go into that. Will you state now what you consider to be a proper basis for the equitable distribution of the cost of the project you propose among the states affected?

A. I consider that the equitable distribution of cost would be a distribution of cost in proportion to the benefits received, by the lands

directly benefited, the lands and property directly benefited by the proposed improvement on the Bois de Sioux River.

Q. I call your attention now to Complainant's Exhibit- A-5 and A-6, and direct your attention also to the testimony given by Dean Shenehon and the other witnesses for the complainant. I will ask you whether or not the project there suggested will do away with or alleviate flood conditions along the Bois de Sioux River?

A. I believe that such a project would to a very minor extent alleviate the situation but that the degree of such alleviation would be far below the degree justified, and that a large part of this investment would be lost when a larger improvement should be
160 undertaken.

Q. Just explain how you arrive at that conclusion that a large part of the investment would be lost when it comes to the installation of a larger project?

A. The improved channel is planned to be 10 feet wide on the bottom and 6 to 8 feet deep. The channel we have planned would be 30 feet wide on the bottom and 10 to 12 feet deep. The small channel suggested would lie in the bottom of the present bed of the Bois de Sioux River. It is too small and the waste banks are so close by that the waste banks would be actually in the present depression that contains water, so they would be actually occupying flow space. There is at present a small low water channel winding back and forth through the Bois de Sioux, and if this ditch were constructed on straight lines it would cut the waste banks and the flow channel, and the waste banks of the new channel would occupy the old channel. The old channel is about as big as the new one and there would be capacity lost as well as gained. If the new channel were made to follow the thread of this stream then the waste banks would cross back and forth along that corrected course, and it would therefore be an obstruction. In fact, such a small improvement would be an obstruction as well as a benefit because the waste banks would be located so close by.

Then the outlets planned would have to be planned for a much larger structure or they would have to be rebuilt. Mr. Shenehon stated that he would construct the dam or levee with practically no preparation of the ground or stripping except in the swales.
161 In case of a more substantial improvement to be constructed in the future, that would have to be reconstructed. The objection is largely this, that the small channel planned would have waste banks occupying the actual watercourse of the Bois de Sioux and that it is so ineffective that before long it would have to be reconstructed to give the protection desired. It was testified that the capacity would be from 150 cubic feet per second to 300 cubic feet per second. The capacity we have suggested is from 700 to 1,000.

Q. One more question, Mr. Morgan, are there any records of precipitation or run-off from which the amount of water contributed by the various states to Lake Traverse and the Bois de Sioux regions can be determined accurately?

A. There are absolutely none except as they can be inferred from the drainage areas of the various streams.

Q. As figured out by Mr. Meyer?
A. Yes, sir.

Cross-examination.

By Mr. Boutelle:

Q. I want to ask you just one question, I think. I want you to assume that when Lake Traverse has an elevation of 975 that the outflow is 500 cubic feet, and that when it is at 976 the outflow is 700 cubic feet, the lake having a normal area, we will say, of 25 square miles.

A. At which elevation?

Q. At the normal elevation, 975, as I understand it. Now,
162 starting with that elevation assume an inflow into the lake of 500 second feet for thirty days, what would be the effect on the lake level?

A. It would be stationary.

Q. Now, assuming the same factors but change the inflow to 1,500 second feet for ten days, what effect would it have on the lake level?

A. You mean a condition where from no flow, or from 500 second feet, there is instantaneously an increase to 1,500?

Q. I am assuming that we start with the elevation at 975 and we have an inflow of 1,500 cubic feet per second for a period of ten days?

A. And that that increase is instantaneous?

Q. Well, I do not know what you mean by "instantaneous"—1,500 second feet to cover in ten days would mean to me covering 1,500 second feet in ten days.

A. That condition would never occur in nature. I can assume it.

Q. You can assume, can you not, that Lake Traverse had an elevation of 975?

A. I can assume all those things.

Q. And you can assume that for a ten day's period there was an inflow of 1,500 second feet and the inflow started when the lake was at 975?

A. I can assume all those things but they would not occur in nature.

Q. I am asking you what would be the effect on Lake Traverse?

163 A. I would have to make a rating curve for the river and work this out by steps. I can only make an approximation to it, but the lake would rise approximately one foot under those conditions.

Q. In the project which you have outlined, as I understand you, you include drawing the lake down at the close of navigation to what level?

A. 970. There again I would say that in the working out of the details of the plan it would be necessary to look into the details of navigation conditions. There might be some slight variation of condition there.

Q. Suppose you draw your lake down to 970, do the run-off conditions that prevail naturally provided into Lake Traverse justify you in assuming that with the flow of the succeeding spring under ordinary conditions you could raise that level of 970 up to the level required by navigation?

A. I cannot answer that question absolutely. This, by the way, is the same objection that was suggested in the complainant's plan. There is a gravel subsoil under this area, such as was explained by Mr. Meyer and as I have actually drained several miles of gravel into the soil, so there is underground feeding and there is in almost all conditions an outflow from Lake Traverse. If that outflow is held for storage after being cut off it would tend to sustain the level of the lake. I think that——

Q. Pardon me, I do not want to get into so much of that, my question does not have any bearing on that. I am asking you if you brought your lake level down at the opening of winter
164 to 970 you are assured of being able to raise it under all conditions the following spring to the minimum required for navigation purposes, and if so, how you reach the conclusion that you could do it?

A. I have not sufficiently complete data to answer that definitely. The reason I think it could be done is this that there is no record of any stage in the lake below about 972 and there is always an outflow from that lake.

Q. Where does it go?

A. Down the Bois de Sioux.

Q. When the lake reaches a level below the natural level of the Bois de Sioux how does it get there?

A. My idea is this, there is probably always a minimum outflow down the Bois de Sioux River.

Q. We won't discuss that.

A. I may be mistaken about that. There may be cases where the navigation conditions would be made worse. There would be cases where they would be made better and the average condition would be better.

Q. You have injected into this case this idea of underground supply of Lake Traverse; that underground supply did not start after this lawsuit was commenced?

A. Hardly.

Q. I am assuming, although if I am in error you may correct me, that that must have started some time along about the time Lake Agassiz was set out and has been in action ever since?

A. Yes, sir.

Q. So that, in dealing with the natural conditions as
165 compared with — we have called the artificial conditions, the inflow from underground sources may be taken as a constant factor?

A. Yes, sir, but I think I stated I don't know how much it was and it would take some time to determine.

Q. But it has been there all the time?

A. Yes, sir.

Redirect examination.

By Mr. Brown:

Q. Without attempting to repeat the hypothetical situation presented to you by Mr. Boutelle a moment ago and upon which you spent considerable time figuring, I will ask you whether or not in your opinion there is any probability of such a case ever arising?

A. No, it would not. You coud not get a flow of 1,500 second feet and then a sudden drop off. You would get a gradual tailing off into a lower stage. You would not get, for instance 500 second feet for 30 days. We do not have such uniform floods as that. If the average for 30 days would be 500 the fact would be you would have maybe 200 and then run up to 1,000 and then down to 200 again.

Recross-examination.

By Mr. Boutelle:

Q. Mr. Morgan, in taking the assumed conditions that I inquired of you with respect to, if you had 1,500 second feet
166 flowing into the lake for a ten day period, how would you get on that assumption less than 1,500 feet flowing into the lake over the ten day period?

A. I simply said that the assumption was one that would not—that the conditions you named were conditions, neither one of which would occur in nature.

Q. Now, Mr. Morgan, do you mean to tell me that we could not have an inflow into Lake Traverse of 1,500 second feet over ten days?

A. You could not have a uniform flow of 1,500 second feet for ten days; it would never occur.

Q. We could have 500 feet, an approximation of 500 feet, second feet, for ten days, couldn't we?

A. When you begin to make that approximation you would find that the conditions are not there, as I stated.

Q. We could start at an elevation of 975, couldn't we?

A. Yes.

Q. And starting at this elevation and suppose it was in the spring of the year, the lake having frozen up at elevation 975; when the spring run-off starts it starts very suddenly, does it not, as a general rule?

A. It differs in different years.

Q. I understand it does go very frequently.

A. It frequently does.

Q. The break-up may come in a few days?

A. Yes.

Q. Particularly where the watershed is a very short dis-
167 tance, as in this case, from the lake itself?

A. Yes, sir.

Q. And we might have 1,500 second feet flowing into the lake at elevation 975?

A. Could have for a certain time of the year.

Q. For a ten days' period?

A. No, that is absolutely impossible. Might be a varying rate that might average 1,500 second feet, but the conditions you state would be impossible.

Q. Would it ever be possible that the volume of water coming into the lake would be 1,500 second feet for ten days?

A. But the results would be different at the lake than you ask me to assume.

Q. But under those conditions what would be the effect upon the lake?

A. That would depend upon the shape of the run-off curve, whether it was more rapid at the beginning of the period or at the end or in the middle. It would depend upon the shape of the run-off curve and that is what you asked me to ignore in your first question.

Q. I asked you to assume this volume of run-off and the measure of it, the outflow so many cubic feet and the inflow so many cubic feet on what they called a straight line curve.

A. You made very definite conditions and I assumed them on those conditions but it is impossible under those conditions.

168 FREDERICK BASS, being first duly sworn, in behalf of defendant, testified as follows:

Examined by Mr. Brown:

Q. What is your name?

A. Frederick Bass.

Q. You were a witness in this case at the other hearings, weren't you?

A. Yes, sir.

Q. Have you considered the order of the Court in this case, dated April 18, 1921?

A. I have.

Q. A copy of that was furnished by us to you some time ago, wasn't it?

A. Yes, sir.

Q. This order has been pretty fully discussed and I will not go into it in much detail except to call attention to the projects suggested and asked you with reference to the feasibility of each of the same for the purpose suggested by the order. Do you think that the flood conditions in the Bois de Sioux valley can be done away with by the construction of detaining basins for drainage water throughout the watershed of the Mustinka River for the purpose of withholding spring waters until the flood period is past?

A. I do not.

Q. Will you state briefly your reasons for that answer?

A. The construction of a detaining basin in the Mustinka basin is feasible only in the moraine zone above Norcross and such de-

tention would only have a minor affect on the elevation of Lake Traverse, since the drainage area affected by such basin would be only about 25 square miles, or less than 15 per cent of the total of Lake Traverse.

169 Q. Have you considered the matter of the construction of a sluice dam at some point in Lake Traverse for the purpose of increasing its capacity as a detaining basin, and in that way doing away with the flood condition?

A. I have.

Q. Do you consider that suggestion feasible?

A. Not alone.

Q. Do you consider either of the suggestions contained in the order and designated as "*d*" and "*e*" therein as practical, that is, when viewed for the purpose of doing away with flood conditions in the Bois de Sioux valley, "*d*" is lowering the level of Lake Traverse by means of an outlet to Big Stone Lake and "*e*" is by diverting some of the drainage water in the so-called Delta Zone and draining it to the Rabbit River?

A. I do not consider either of those adequate to remedy the flood conditions.

Q. Do you think it is possible to install some sort of works in the Bois de Sioux valley which if installed would result in doing away with or alleviating flood conditions complained of?

A. I do.

Q. Have you given consideration to some project which in your opinion would have the result desired?

A. I have.

Q. Will you explain the project you have under consideration?

A. This project consists in the construction of a dam across the valley of Lake Traverse, about four miles south of the Vil-

170 lage of White Rock, with a sluiceway for the outlet and for the control of the water flowing past, and the construction of an approach channel from a point to the south of the dam to the dam, and a ditch from the dam northerly to a point somewhat below the Rabbitt River. I made designs for a number of such projects of varying degrees of magnitude and for one which I think would be most desirable.

Q. Have you those plans in shape for presentation as exhibits?

A. I have not them in shape for presentation as exhibits but I can briefly describe them.

Q. I think in place of describing the exhibits you better take up the various features of this project, such as the dam, the sluiceways, the control works and the ditch and explain them so we will understand the project as a whole; where do you propose to establish the dam?

A. That dam is to be built across the valley, as I said, about four miles south of White Rock, approximately the same location as shown in Bulletin 1017.

Q. What height do you propose to make it?

A. The top of this dam I propose to make elevation 978.

Q. And what elevation do you propose for your spillway?

A. I propose to construct the outlet channel from the dam at an elevation approximately 961 at the point where it leaves the dam and to provide there sluiceways which will be controlled by gates capable of passing a flow of 3,000 second feet but which would be operated so as to close the reservoir entirely or to allow any
171 amount of water between zero and 3,000 second feet to pass it. The dam would have a top width of 15 feet, would have slopes of three to one—one vertical to three horizontal,—and would contain approximately 67,000 cubic yards. The sluiceway would be constructed of concrete and would contain approximately 1,850 cubic yards of concrete masonry. The principal feature of the improvement which I would recommend would be a channel or ditch, as described, extending northerly from the dam to a point below the Rabbit River, having a capacity of 700 second feet, requiring approximately 2,000,000 cubic yards of excavation, having a bottom width of 30 feet and side slopes one to one.

Q. Is this project which you suggest along the lines of the one suggested by Mr. Morgan in his testimony?

A. It is very much the same. I would contemplate drawing the water in the lake down to an elevation of 970 and would, by means of regulating the outflow, keep it below an elevation of 975 approximately. The entire cost of this improvement I estimated at $365,000.

Q. Just divide up that cost, the amount you propose to put in the ditching of the Bois de Sioux and the amount you propose to put into the dam and control works.

A. The cost of the dam I estimated at $23,000, cost of the sluiceway $35,000, the cost of the main channel or ditch at $255,000, which includes bridges and crossings and lands necessary, and the cost of the approach channel south of the dam at $27,000. This totals $330,000 and I have allowed $35,000 for contingencies.

172 Q. Considering the conditions as they existed in 1916, what — you say the effect of this project would be in case of the recurrence of such conditions with reference to the overflowing of the land in the Bois de Sioux valley?

A. This detention reservoir constructed by means of this dam and the channel below would provide for that condition without any flooding of the lands in the Bois de Sioux valley.

Q. Now, on the basis of benefits conferred, how would you distribute the cost of the project among the three states affected, Minnesota, North Dakota and South Dakota?

A. There are in lands flooded, as nearly as I can estimate, 18,000 acres, of which 12,000 are in North Dakota, 3,000 in Minnesota and 3,000 in South Dakota. There are, I believe, about 25,000 acres of land which will be furnished drainage outlet. The distribution of such land I have not the figures for right here. That was the total that I had estimated from the maps.

Q. Do you recall the distribution made of those lands by Mr. Morgan?

A. No, I do not.

Q. How would you assess the cost on the lands to which you have referred?

A. I think the important thing at the present time is the division of these lands into these two classes, the lands which will be relieved from flooding and the lands which will be furnished an outlet for drainage. From inquiries which I have made as to the value of lands on the rim of the flooded area and the condition of the
173 *of the* lands, I would judge that the benefits to the flooded lands, the lands that would be relieved from flooding by reason of the prevention of flooding would be from $15 to $25 per acre in the average. I have estimated these values at $15 an acre, which gave me $270,000. The lands which would be benefited by having an outlet provided for drainage I estimated an average benefit of $1 an acre, giving $100,000.

Q. Are you apportioning the cost of figuring benefits?

A. I am figuring benefits. I am not apportioning the cost.

Q. The benefits would be $15 an acre for the lands flooded and $1 an acre, for the lands given a drainage outlet, is that it?

A. It is the assessment which might be levied against such lands for the benefits which would be conferred. I do not assume that it would be equal to benefits received.

Q. In order to cover the cost?

A. In order to cover the cost. I do not assume it would be equal to the benefits received. I presume it would have to be somewhat less. That makes a total of $370,000. In addition to that there are other benefits which would be received by municipalities, railroads and roads, which I have not determined, but it would make the $370,000 plus that sum, to cover the project as I have outlined it.

(At this time recess was taken until July 21, 1922, at 10 o'clock A. M.)

174 July 21, 1922—at 10 a. m.

Hearing resumed as heretofore.

F. C. SHENEHON, recalled in behalf of complainant, testified as follows:

Examined by Mr. Boutelle:

Q. Dean Shenehon, calling your attention to the project as testified to by Professor Chandler and yourself in this case and confining myself to that particular project, there has been some testimony here upon the part of the defendant aimed at showing, as I understand it, that the installation of that project might have some kind of a menacing effect, so far as the conditions in the Lake Traverse-Bois de Sioux Valley are concerned, on that area. What will you say with reference to that?

A. The criticism made with regard to the cross-valley dyke, which has its crest or top under the scheme proposed by Professor Chandler and myself and shown on Complainant's Exhibit A-6, the top

elevation is indicated as 978,—I call attention to the fact that in the project proposed by two of the experts on the part of Minnesota in this hearing the elevation of the top of the embankment has been given as the same 978, and I have in mind that Mr. Meyer made the top of his embankment 980. In setting the elevation of this cross-valley dyke I had in mind that in extraordinary flood situations or in such conditions as obtained in 1916, the water might reach an elevation of 976, leaving only two feet of free-board. I had in mind that for the most part this dyke would be tolerably dry and would become grass covered. I had in mind, of course, that it would be maintained, it would not be allowed to disintegrate, any more than any other dyke or any other project would be allowed to disintegrate or go to pieces. I had in mind that while there is some sweep of wave action, that the waves for the most part would come over shallow ground impeded by weed, etc., and that there wasn't any large danger of breaching, and that if there should be any overwash that the situation might be similar to that which came in 1916, where the water passed over the road.

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Q. At White Rock?

A. At White Rock, which forms a cross-valley dyke of somewhat similar conditions. The only difference there was that the water was actually at the crest of the road at that time; here the water would be at an elevation of two feet less than the crest of the dyke. I think a misunderstanding as to the capacity of the sluiceways enters in the criticism of the elevation of the dyke itself. I estimated that when the elevation of the water surface at the controlling works is 976, or two feet below the top of the dyke, that we have 240 feet of cross-sectional area in the sluiceways themselves, and if there is a drop through the sluiceways of one foot we will have a volume of flow passing through the sluiceways alone something over 1,400 cubic feet per second.

I myself cannot conceive of any situation where an inflow condition similar to that of 1916 occurs when there would be a very large outflow through the sluices, and that outflow may, under the project which we have in mind, be a natural flow less the amount that we have charged to excess. In other words, at elevation 976 we will have a less outflow than occurred at 977 in 1916. Professor Meyer mentioned the fact that the capacity of the sluices might be perhaps 400 cubic feet per second. Under those circumstances if the elevation is 976, we must have a flow not much exceeding 1.7 feet per second, that is, a velocity of 1.7 feet per second, and under those circumstances the difference in elevation between the down-stream side of the stream and the up-stream would be somewhere in the neighborhood of ¾ of an inch. I simply suggest this to show that we haven't any such situation as a pond of water, which is Lake Traverse itself, at a high elevation and the water surface on the lower side many feet or many inches at a lower level, under the scheme of operation contemplated by Professor Chandler and myself.

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I myself have not seen the necessity of creating additional outflow capacity in the form of a spillway because when the sluices

are operating at their full capacity, as I have just shown, something over 1,000 feet or 1,400 cubic feet per second, the down-stream channels simply cannot carry the water away. In other words, the sluices do not become the only retarding effect. If I had designed channels of such capacity that the water might have been immediately drawn away, which might form part of a flood prevention project rather than a restoration project, then there might be some small menace coming in. But the think appears to me somewhat trivial, especially as by the expenditure of a few hundred or a few thousand dollars, the embankment might be placed a foot
177 or two higher if desirable. Some little leeway was allowed in my estimate for extras which might take care of this small additional elevation of the dyke. I think in the plan submitted by us that the actual field examination might reveal a reason for doing a little bit different in some places. We are stating principles rather than ultimate conclusions on some few points of this kind.

The other thing is whether or not excavation in the channel of the Bois de Sioux would necessarily be placed in the existing channel of the Bois de Sioux and stop that channel up. That again appears to me just a little bit trivial because I am assuming that when this construction is made that that engineering good sense which must exist on both sides of the controversy and among the engineers representing both Minnesota and North Dakota would prevail, to place that spoil where it did the least damage. If a 10 feet berm is not enough use 20. That is simply a little detail. To illustrate things we used a 10 feet berm; so I cannot see any value in criticism of that kind.

I wish to state that on the plan itself, which is Complainant's Exhibit A-5, this statement is made, in the upper left-hand corner: "Spoil banks not continuous but on alternate sides." I think that covers the situation, that the spoil will be placed in such a way so that it will have no obstructive value or the least obstructive value, and I do not think any conclusion should be drawn that this would be done foolishly. I think of no other criticism which has
178 been directed against these works which would not apply as well to either of the three projects that have already been contemplated.

Q. There was some testimony given on the defense, Dean Shenehon, the import of which, as I understand it, was that the installation of the project to which you have just been referring would be inimical or disadvantageous in the event the larger drainage project of interstate character, such as has been testified to here or such as is included in this Government Bulletin 1017, to which reference has been made, sould be later on undertaken. Are you familiar with the general project embraced in Bulletin 1017 as prepared by Mr. Simons?

A. In a general way, yes.

Q. I will ask you what you have to state with reference to this proposed project of Professor Chandler and yourself being inimical to it or operating as a disadvantage in the event the larger project was undertaken?

A. And in your question do I understand you wish me to include also the project now proposed by Minnesota in this hearing?

Q. Yes.

A. The situation then is, there are three propositions before us. One is the great flood control project of Mr. Simons, which contemplates the entire removal of any flood conditions on the Red River of the North.

Q. That is the project that appears in this Bulletin 1017?

A. Yes, sir, I speak of the Red River of the North because it extends to Canada. He divides the project up into three parts.

179 Particular attention in this consideration should be given to the Bois de Sioux project, which is one of the three elements into which he divides his bigger project. Those three are the Bois de Sioux, the Red Lake River and the Red River of the North itself the lower reaches. Mr. Simons adopts in many ways precisely the same principles which are adopted in the two other projects, the two projects of lesser magnitude. He places a cross-valley dyke in exactly the same location where the experts of Minnesota place it and where Mr. Chandler and myself have placed it. In other words, we all agree on that one location tentatively as being the best location for the cross-valley dyke.

Now, in his largest scheme Mr. Simons puts the elevation of this dyke at a very considerable height. I think the spillway is 983 and his dyke somewhat higher, and in order to prevent overflow at the other end of Lake Traverse, into the general waterway of Big Stone, he has to have a levee there. In other words, he greatly increases the reservoir capacity or retaining capacity of Lake Traverse. He has in this cross-valley dyke control works just as we all have in the three projects and the two other projects have control works, and he dredges a channel down-stream from these control works and up-stream a certain distance to the south, so as to make certain of the approach of the water to the control works and these channels have very considerable dimensions. A project of this kind, of course, would take a long time, both in the preliminaries and in the execution. I think perhaps the principle of the spillway which enters into the Simons project and the Minne-

180 sota experts' project is handled in a little different way in the project prepared by Professor Chandler and myself. The project of the Minnesota experts is the Simons project or embraces the elements of the Simons project reduced to a small scale. But the scale of this project is sufficiently large so it would take for its construction two years or more, while the project proposed by Professor Chandler and myself would not take over two seasons of open work, and cost very much more money.

Q. You mean less money, the scheme proposed by Professor Chandler and yourself?

A. Both these other projects, the Simons and the Minnesota experts' projects would cost more money, and I think that comparison should be made at this point. Mr. Simons estimates $1,400,000 I think perhaps $200,000 alone for supplemental drainage of the overflow lands down the Bois de Sioux Valley. The expense or cost

gured by the Minnesota experts is between $400,000 and $500,000, d the expense of the Chandler-Shenehon plan is $110,000.

Now, I have said that this cross-valley dyke is on the same location cross-section line about four miles below White Rock running st and west, and that it is made of earthwork—all three are made earthwork—and that when this is accomplished a certain part of e earthwork would be done for a larger project and may be en-loped by the larger project. So far as controlling works are con-rned I indicated that the controlling works designed by me, which present two sluices, might give an outflow capacity, with a foot flow in the sluices when the lake is at 976, about 1,400 cubic 1 feet per second. If Minnesota wishes to place one or two more units they will get any increased spillway or outflow pacity through the sluices which is desirable. That is simply a atter of adding units, of constructing more units. Now, as to the annels, when you excavate a channel to a certain height following e lines of some other channel to come along later on, you have ready excavated a portion of it, and during the construction of ese channels, if any project is in view there is no reason on earth hy this situation, the building of these channels, cannot form the eliminary portion of any larger project. In other words, the ex-vation done is so much excavation towards the larger project.

Q. Then, from your viewpoint as an engineer what would you y generally as to whether this plan as you have proposed would an interference with or inimical or could be made so as to be a nk in the whole chain, for instance, if a larger project were later ndertaken?

A. The larger project envelops and utilizes the lesser project.

Mr. Brown: No cross-examination.

(At this time hearing was adjourned until 10 o'clock A. M., July 1, 1922.)

82 Supreme Court of the United States, October Term, 1920.

No. 14, Original.

THE STATE OF NORTH DAKOTA, Complainant,

vs.

THE STATE OF MINNESOTA.

Order.

[April 18, 1921.]

To afford an opportunity for the taking of supplemental proof eemed by the court necessary to an adequate consideration and isposition of the cause, it is ordered that the case be restored to

the docket to the end that the parties may proceed promptly to take the testimony of not exceeding three engineering experts on each side as to the possibility, within the limits of a reasonable expenditure, of doing away with or ameliorating the flood conditions along the Bois de Sioux River by means other than the injunction prayed for in the bill herein, the testimony thus to be taken to be particularly directed, among other things, to the possibility and effect and estimated cost of any of the following projects: (*a*) the construction of detaining basins for drainage water throughout the watershed of the Mustinka River for the purpose of withholding a part of the spring waters until the flood period is past; (*b*) the construction of a sluice dam at any point in Lake Traverse for the purpose of increasing its capacity as a detaining basin; (*c*) artificial improvement in the channel of the Bois de Sioux River in order to improve its capacity as an outlet for the waters of Lake Traverse in times of flood, so as to prevent overflow and the inundation of the Bois de Sioux valley, the works to include a sluice dam at the foot of Lake Traverse if necessary in order to maintain its level in times of normal flow; (*d*) lowering the level of Lake Traverse by
183 means of an outlet to Big Stone Lake, controlled by a sluice dam, with a view to increasing its capacity as a detaining basin during the flood period; (*e*) by diverting some of the drainage water from the so-called Delta Zone, in order to discharge the same down the Mustinka River, to the Rabbit River.

It is further ordered that the parties may take the testimony of not exceeding three witnesses on each side concerning the proper equitable basis for apportioning the expense of any feasible project among the States drained by the Lake Traverse—Bois de Sioux watershed, taking into account, among other considerations, the amount of water discharged by each State into Lake Traverse or the Bois de Sioux River and the benefit conferred by the improvement.

It is further ordered that testimony shall be taken sufficient to advise the Court as to the flood conditions which have prevailed, since the filing of the bill herein, in the area claimed to have been flooded by the action of the State of Minnesota.

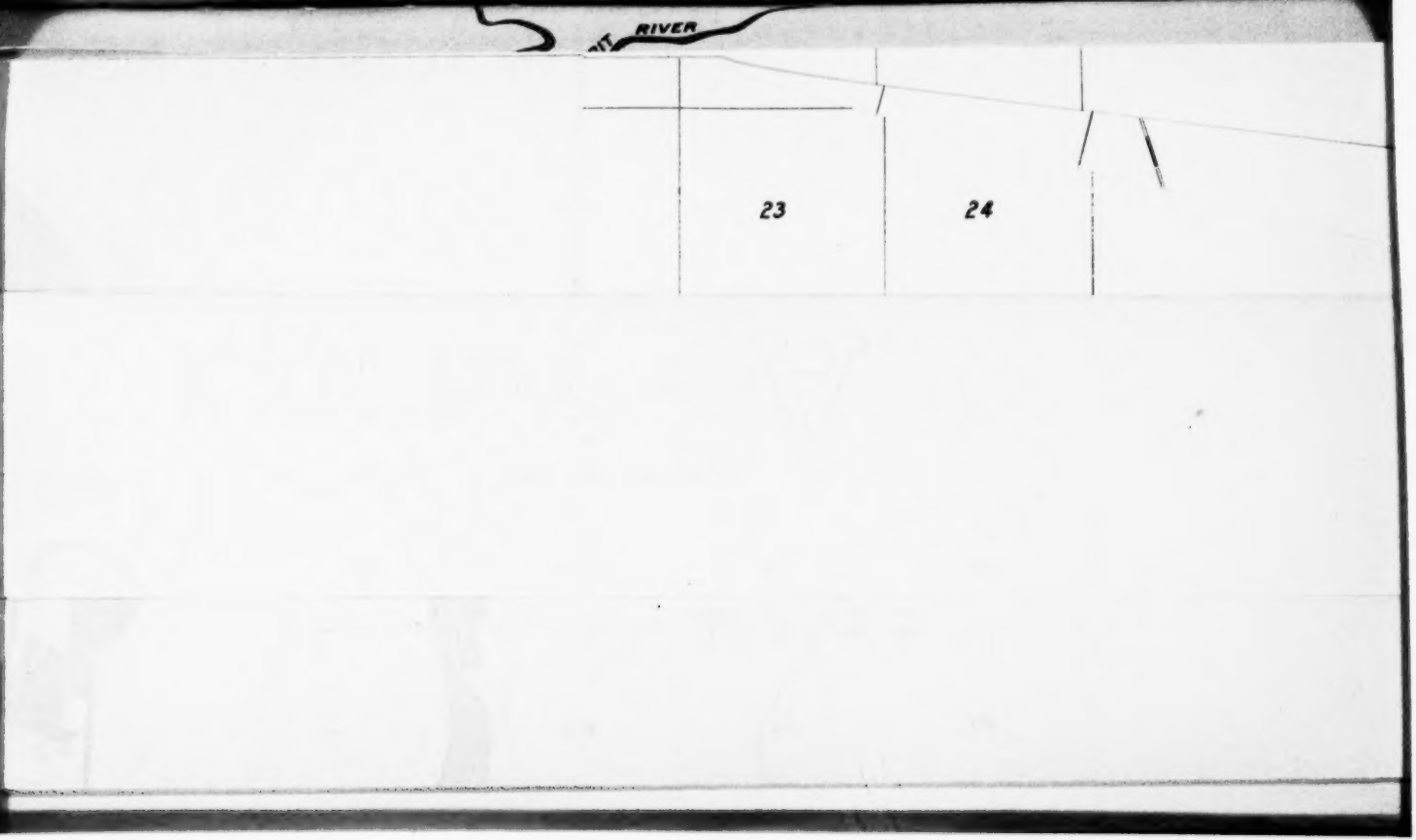
Before the taking of the testimony on the subject above referred to and the resubmission of the cause the Court will entertain a motion in this case and the case of The State of South Dakota v. The State of Minnesota, No. 15, Original, to consolidate that case with this if counsel are so advised, to the end that the possibility may be considered of alleviating flood conditions in Lake Traverse and along the Bois de Sioux River by other means than the injunction prayed for in that case and to permit South Dakota to take testimony at the hearing now ordered in this case.

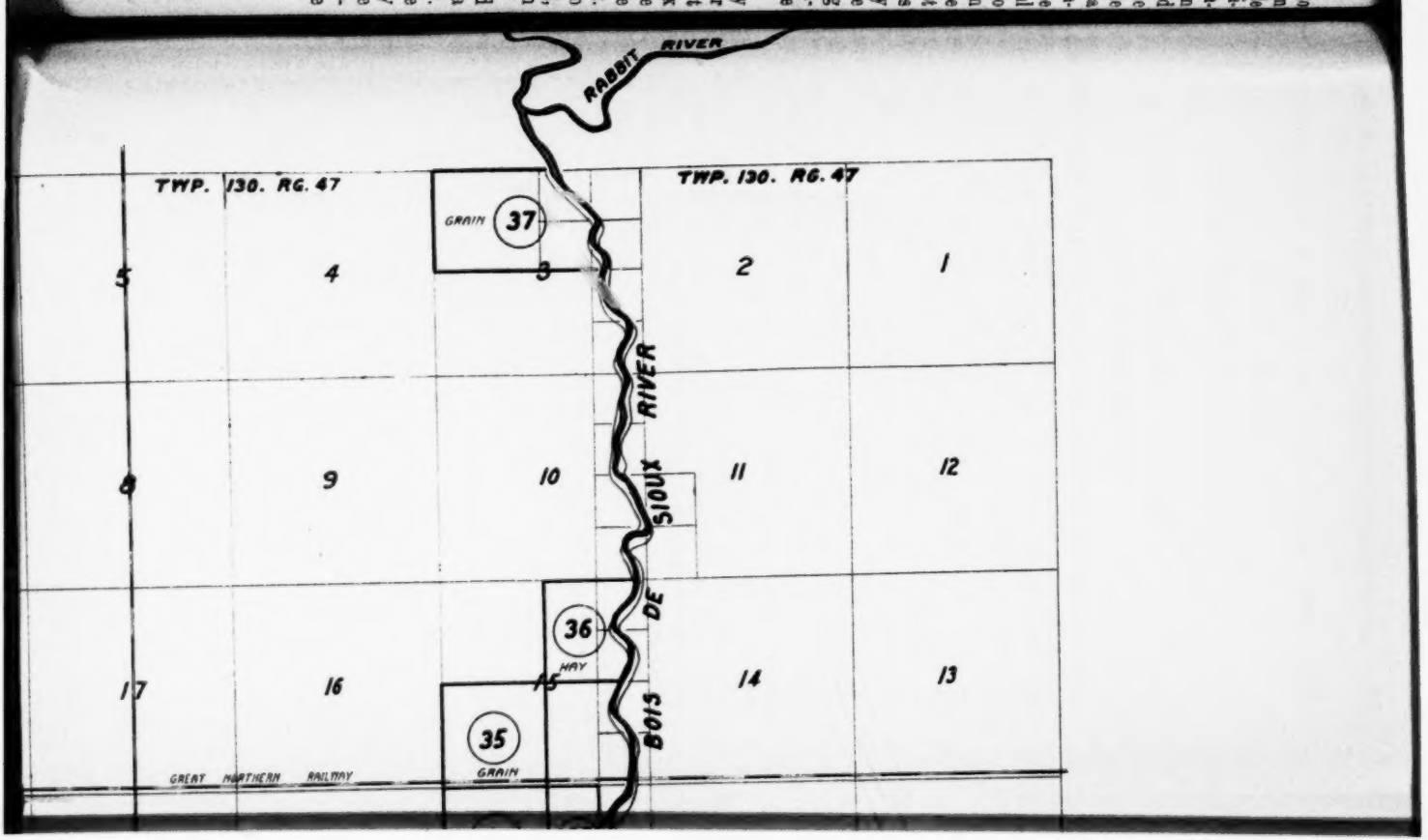
A true copy.

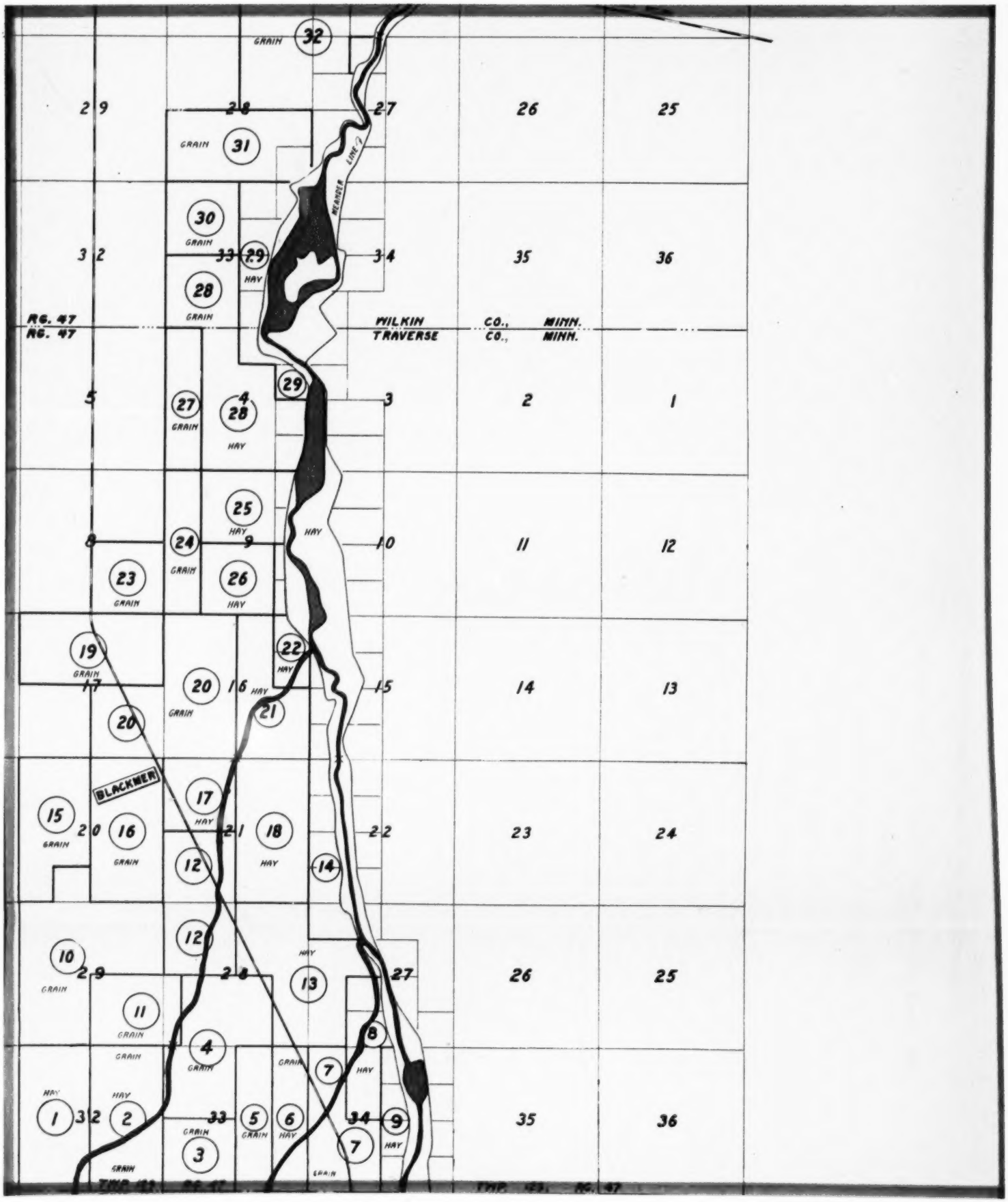
Test:

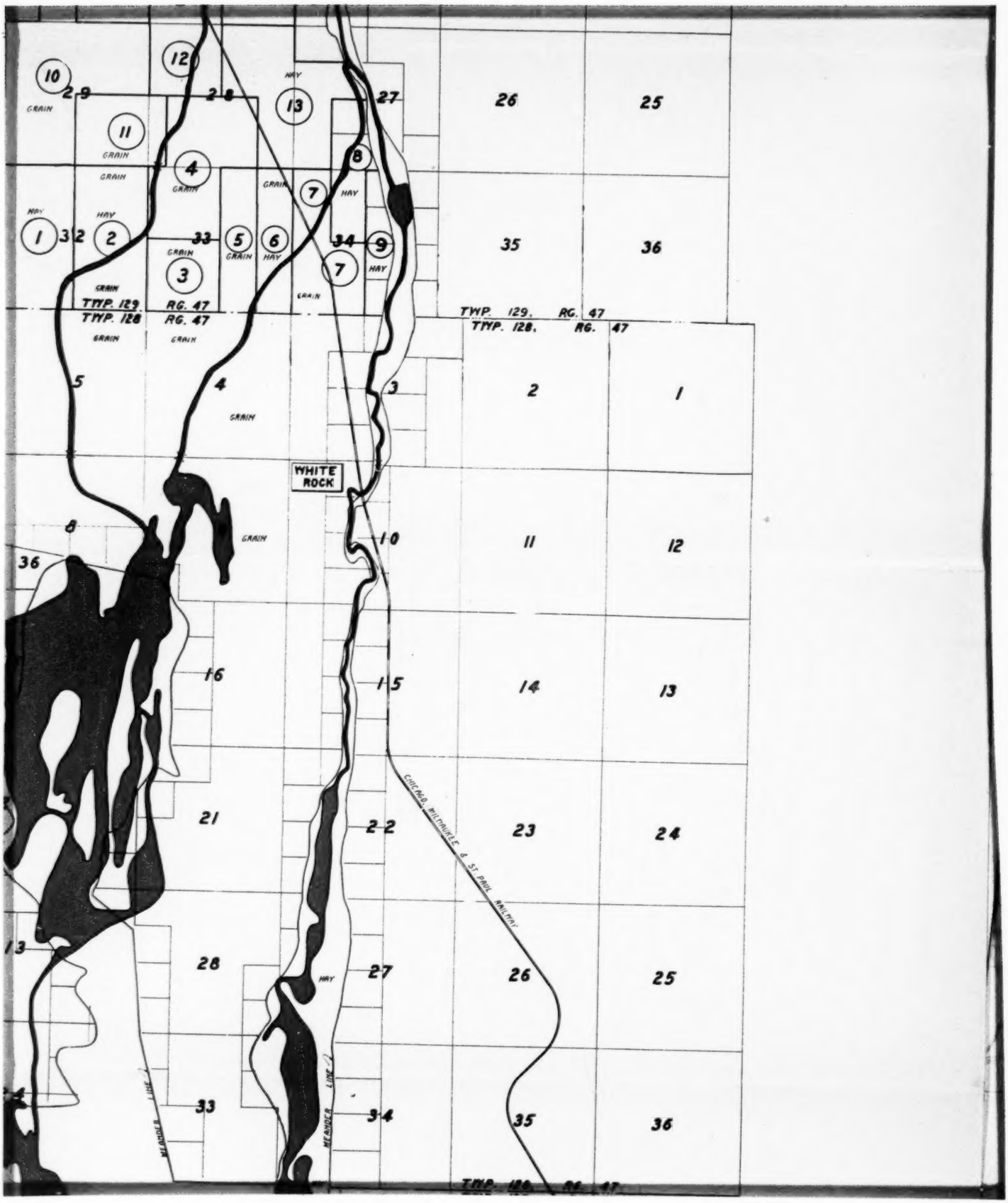
[Seal of the Supreme Court of the United States.]

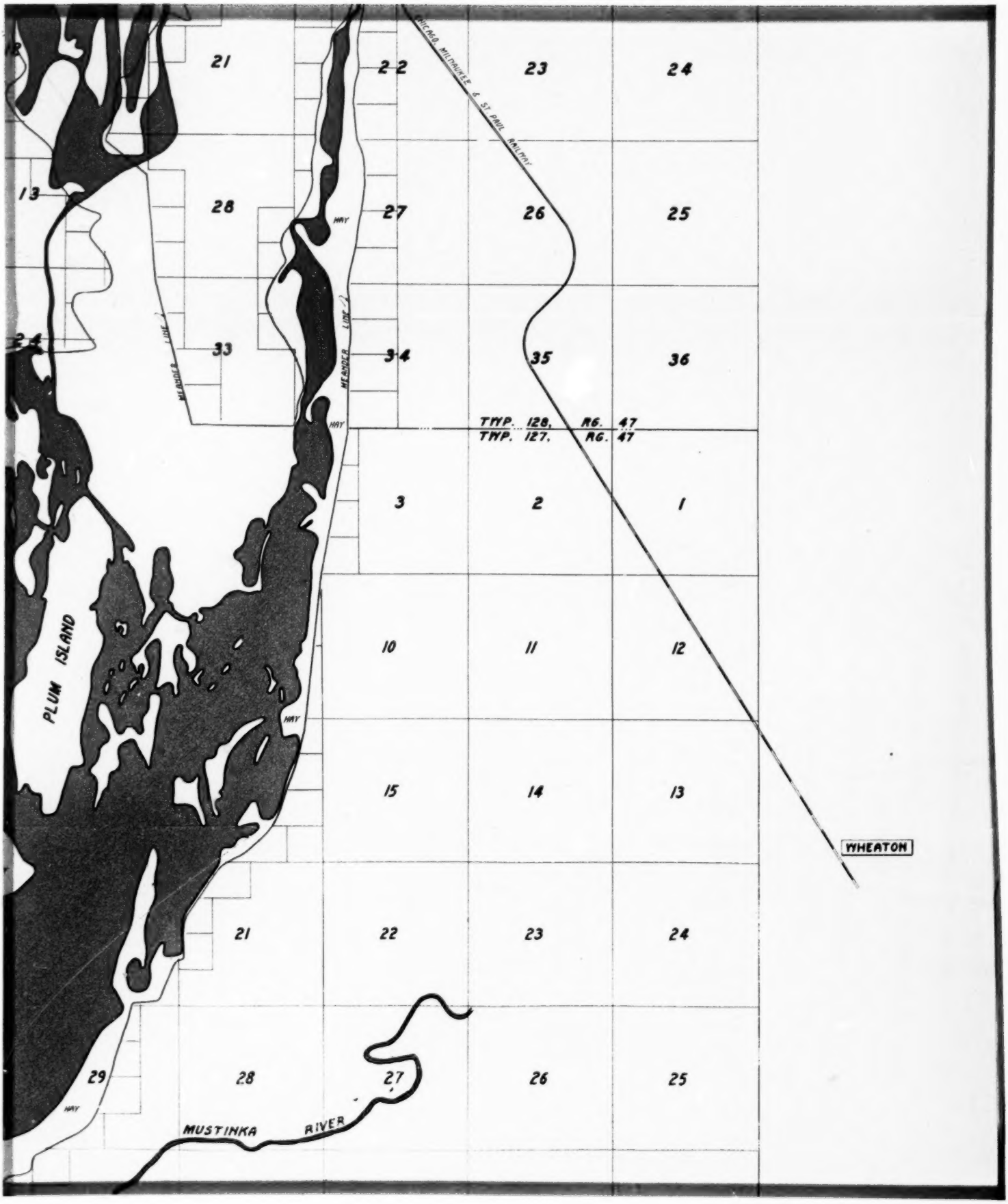
JAMES D. MAHER,
Clerk Supreme Court, U. S.


RIVER
23
24


RABBIT RIVER
TWP. 130. RG. 47
TWP. 130. RG. 47
GRAIN
37
5
4
3
2
1
SIOUX RIVER
8
9
10
11
12
36
HAY
17
16
15
14
13
DE BOIS
35
GRAIN
GREAT NORTHERN RAILWAY


RG. 47
RG. 47
WILKIN CO., MINN.
TRAVERSE CO., MINN.
BLACKMER
MEANDER LINE
GRAIN
HAY
TWP. 129, RG. 47
TWP. 129, RG. 47


TWP. 129. RG. 47
TWP. 128. RG. 47
WHITE ROCK
CHICAGO, MILWAUKEE & ST. PAUL RAILWAY
MEANDER LINE
GRAIN
HAY


CHICAGO, MILWAUKEE & ST. PAUL RAILWAY
MEANDER LINE
MEANDER LINE
PLUM ISLAND
MUSTINKA RIVER
TWP. 128, RG. 47
TWP. 127, RG. 47
WHEATON
21
22
23
24
28
27
26
25
33
34
35
36
3
2
1
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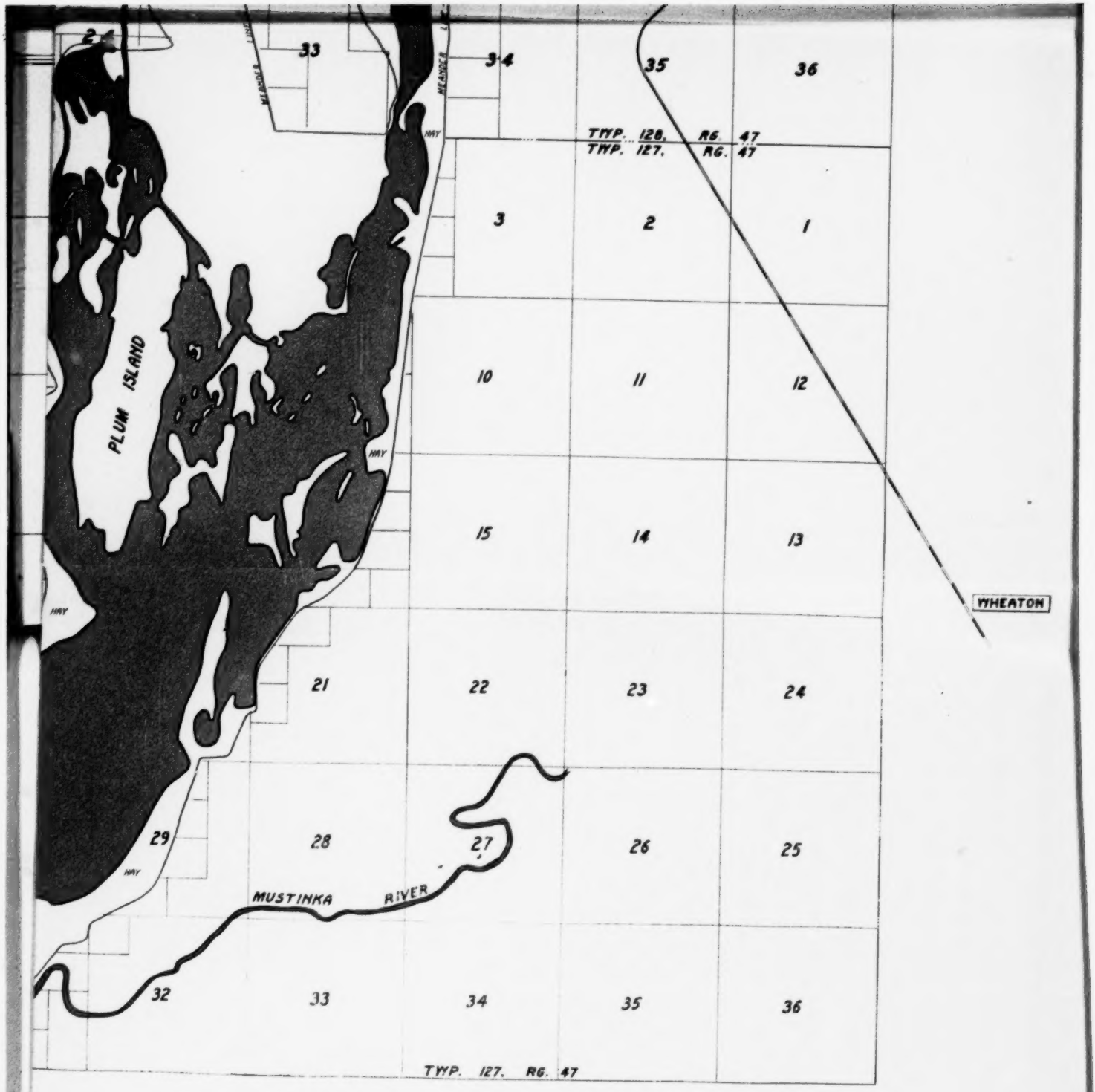

2
33
34
35
36
TWP. 128, RG. 47
TWP. 127, RG. 47
3
2
1
PLUM ISLAND
10
11
12
HAY
15
14
13
WHEATON
HAY
21
22
23
24
29
28
27
26
25
HAY
MUSTINKA RIVER
32
33
34
35
36
TWP. 127. RG. 47

EXHIBIT - A

184 Supreme Court of the United States, October Term, 1920.

No. 14, Original.

STATE OF NORTH DAKOTA, Complainant,

vs.

STATE OF MINNESOTA, Defendant.

Report of Commissioner.

I hereby certify that pursuant to the order of this Court bearing date the 18th day of April, 1921, hereto attached, directing that additional testimony along specified lines be taken in the above entitled matter, and pursuant to the order of said court bearing date the 1st day of May, 1922; fixing the time and circumstances for taking said additional testimony, I, as Commissioner in said last mentioned order designated, took the testimony offered by and on behalf of the complainant, State of North Dakota, and the defendant, State of Minnesota, at such times and places as were mutually agreed upon between counsel for the respective parties; that such testimony was taken by and with the assistance of one competent stenographer furnished by said parties, and the foregoing transcript of 181 pages of typewritten matter, contained in one volume, is a full, true and correct transcript of the testimony taken before me as commissioner, and the same, together with the exhibits therein referred to, sets forth all the evidence offered or introduced by or on behalf of each of said parties, and all the proceedings had and taken
185 before me except as hereinafter stated; that complainant's exhibits are numbered A-1 to A-6, inclusive, and defendant's exhibits are numbered A-2 to A-12, inclusive.

I certify further that prior to their examination each witness who was called to give testimony was duly sworn by me to testify to the whole truth and nothing but the truth.

I certify further that at 10 o'clock A. M., on July 31, 1922, the hearing was ajourned from time to time until *until* 10 o'clock A. M., October 6, 1922, at which time there was offered in evidence by the parties to said cause a stipulation duly signed by their respective attorneys with a map thereto attached, marked Exhibit A, representing surroundings and flood conditions in the area claimed to have been flooded by the action of the State of Minnesota since the filing of the bill herein. The attorneys for the respective parties hereto requested that said stipulation and exhibit be attached to said transcript and transmitted therewith to the clerk of said court; and I certify further by reason of said offer and request I have attached said stipulation and exhibit to said transcript to be filed therewith with said Clerk for consideration by the court.

WALLACE B. DOUGLAS, *Commissioner.*

Dated at St. Paul, Minnesota, October 10, 1922.

(Here follows Exhibit A, marked page 186.)

187 Supreme Court of the United States.

THE STATE OF NORTH DAKOTA, Complainant,

vs.

THE STATE OF MINNESOTA.

Stipulation Attached to Exhibit A.

In compliance with that portion of the order of the Court restoring this cause to the docket for the taking of further testimony, providing as follows:

"It is further ordered that testimony shall be taken sufficient to advise the Court as to the flood conditions which have prevailed since the filing of the bill herein, in the area claimed to have been flooded by the action of the State of Minnesota,"

the parties hereto agree to the following facts:

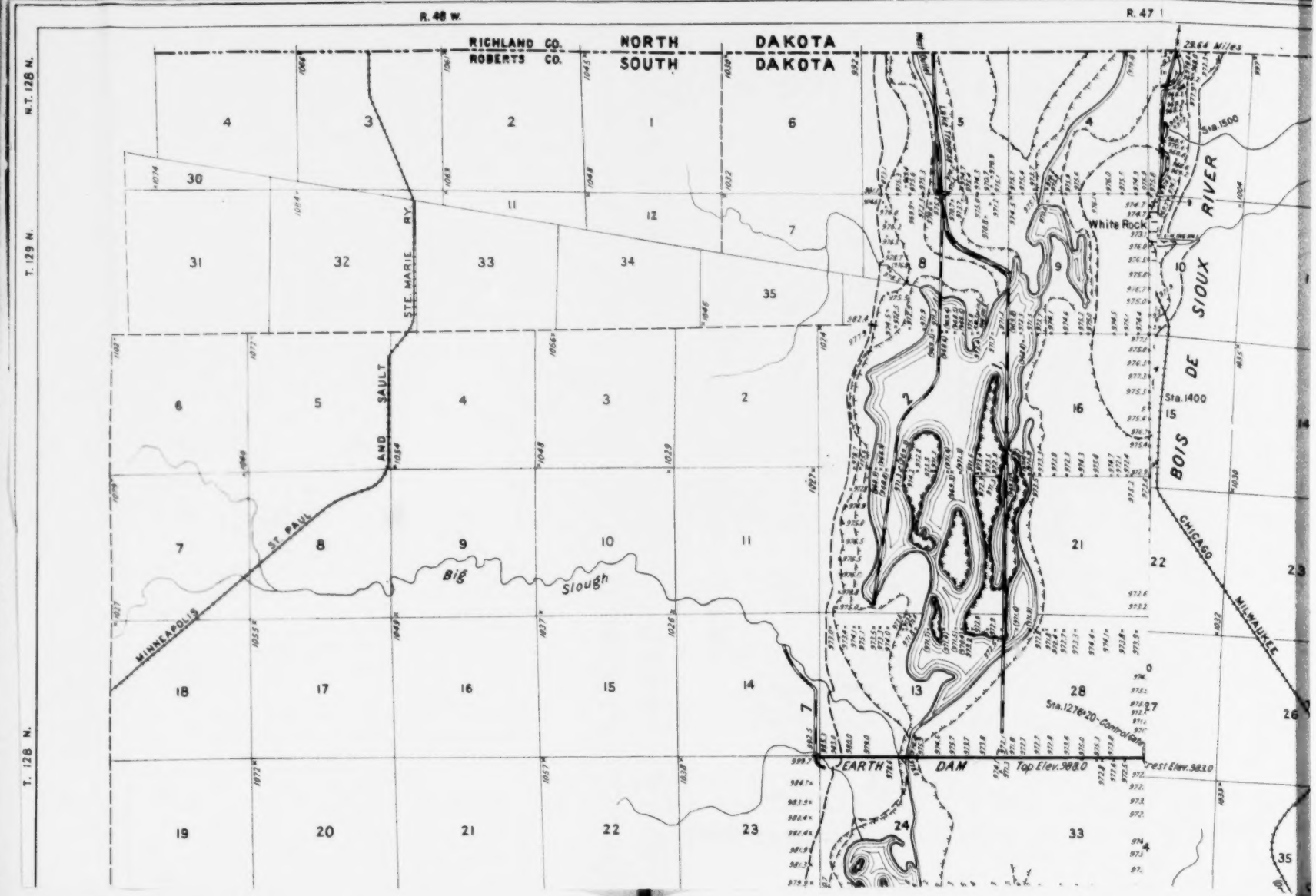
That attached hereto, marked Exhibit A and hereby made a part hereof, is a map or plat of the area of North Dakota here in question. That Exhibit A represents the present and normal conditions as to flooding in the valley of the Bois de Sioux River. That there have been no floods since the filing of the bill. Those portions of the map indicated in blue represent the presence of water. The government meander lines are indicated in red paralleling the river and lake. The several tracts outlined in heavy black lines and numbered within circles from one to thirty-seven, which include lands claimed by complainant to have been damaged by flooding, are now, and since the filing of the bill (except as otherwise shown in the original record with reference to these conditions in the year 1917) have been, in the general condition outlined in said Exhibit A: that is, free from overflow by flood waters and used for the production of grains and grasses as thereon indicated.

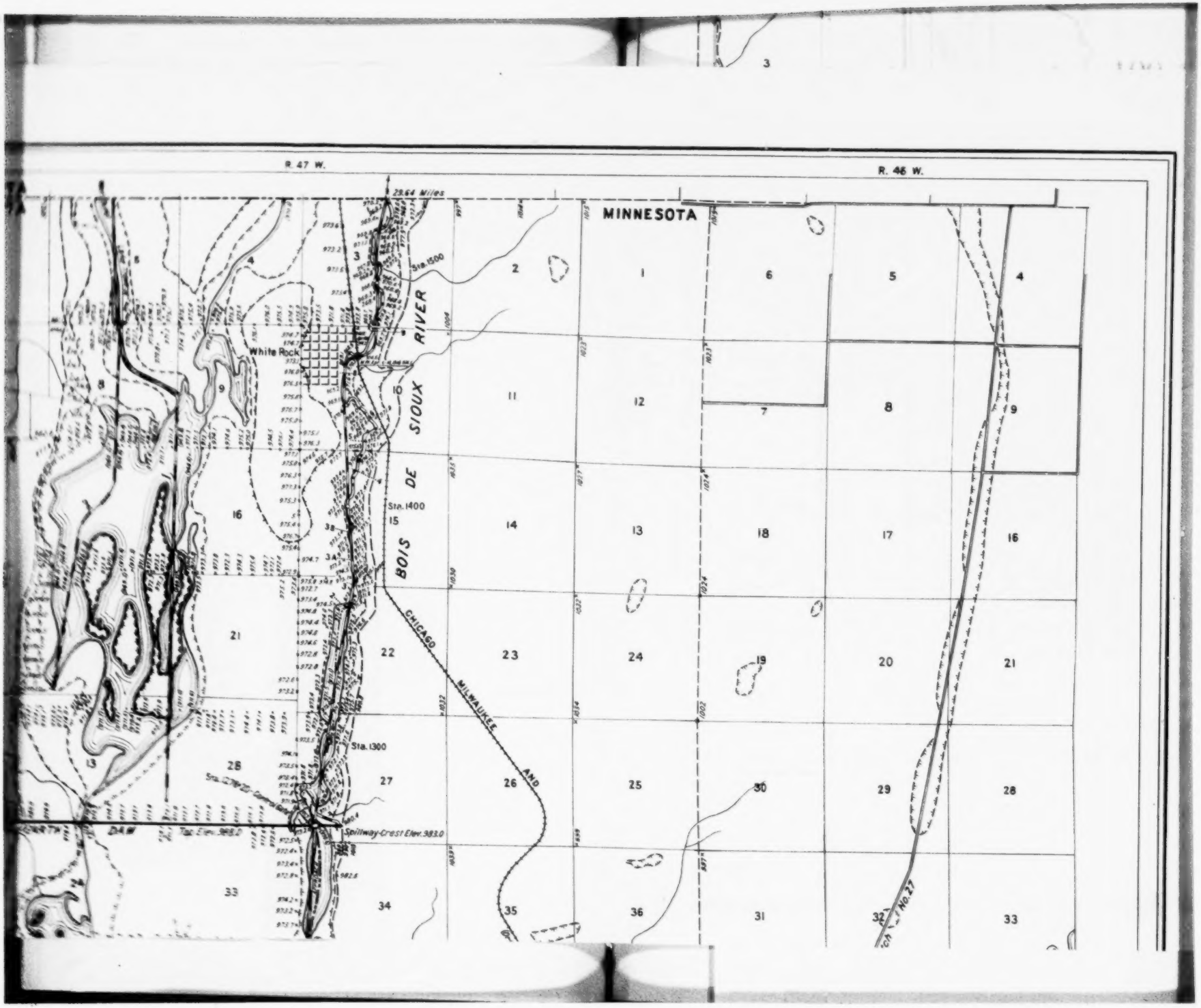
188 & 189 Nothing in this stipulation shall be held or construed as in anywise bearing upon the issue of damages or the effect produced by the floods described in the previous record on any of the lands involved.

Dated September 12, 1922.

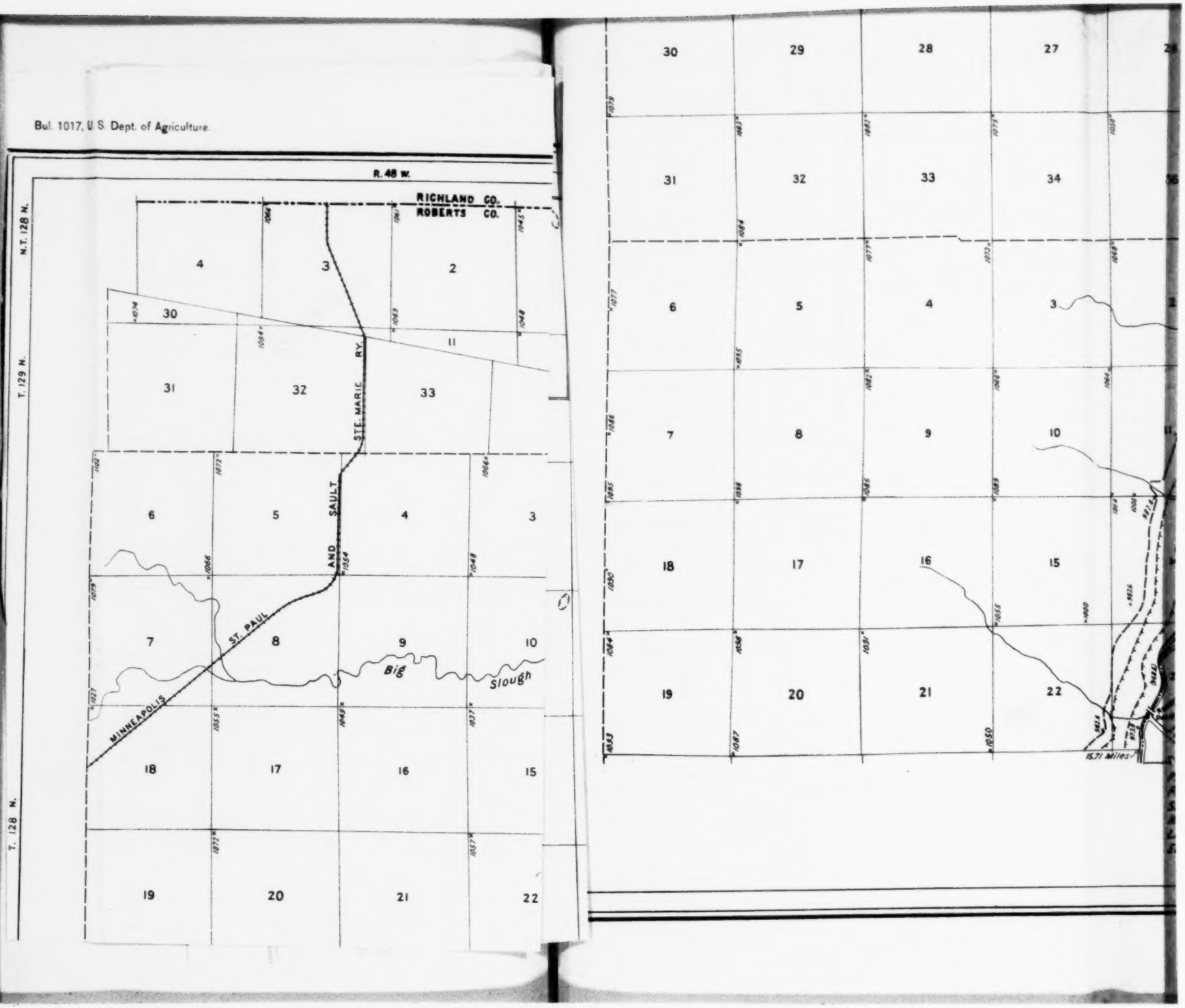
SVEINBJORN JOHNSON,
Attorney General;
M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Attorneys for North Dakota.
CLIFFORD L. HILTON,
Attorney General;
MONTREVILLE J. BROWN,
Attorneys for Minnesota.

190 [Endorsed:] Supreme Court of the United States. The State of North Dakota, Complainant, vs. The State of Minnesota. Stipulation. Exhibit A.


R. 48 W.
R. 47 W.
RICHLAND CO.
ROBERTS CO.
NORTH DAKOTA
SOUTH DAKOTA
T. 129 N.
T. 128 N.
STE. MARIE
AND SAULT
ST. PAUL
MINNEAPOLIS
Big Slough
White Rock
SIOUX RIVER
BOIS DE
CHICAGO
MILWAUKEE
Sta. 1500
Sta. 1400
Sta. 1276+20 Control Gate
EARTH DAM
Top Elev. 988.0
Crest Elev. 983.0
29.64 Miles


R. 47 W.
R. 46 W.
MINNESOTA
BOIS DE SIOUX RIVER
White Rock
Sta. 1500
Sta. 1400
Sta. 1300
CHICAGO MILWAUKEE AND
Spillway Crest Elev. 983.0
No. 27

Bul. 1017, U.S. Dept. of Agriculture.



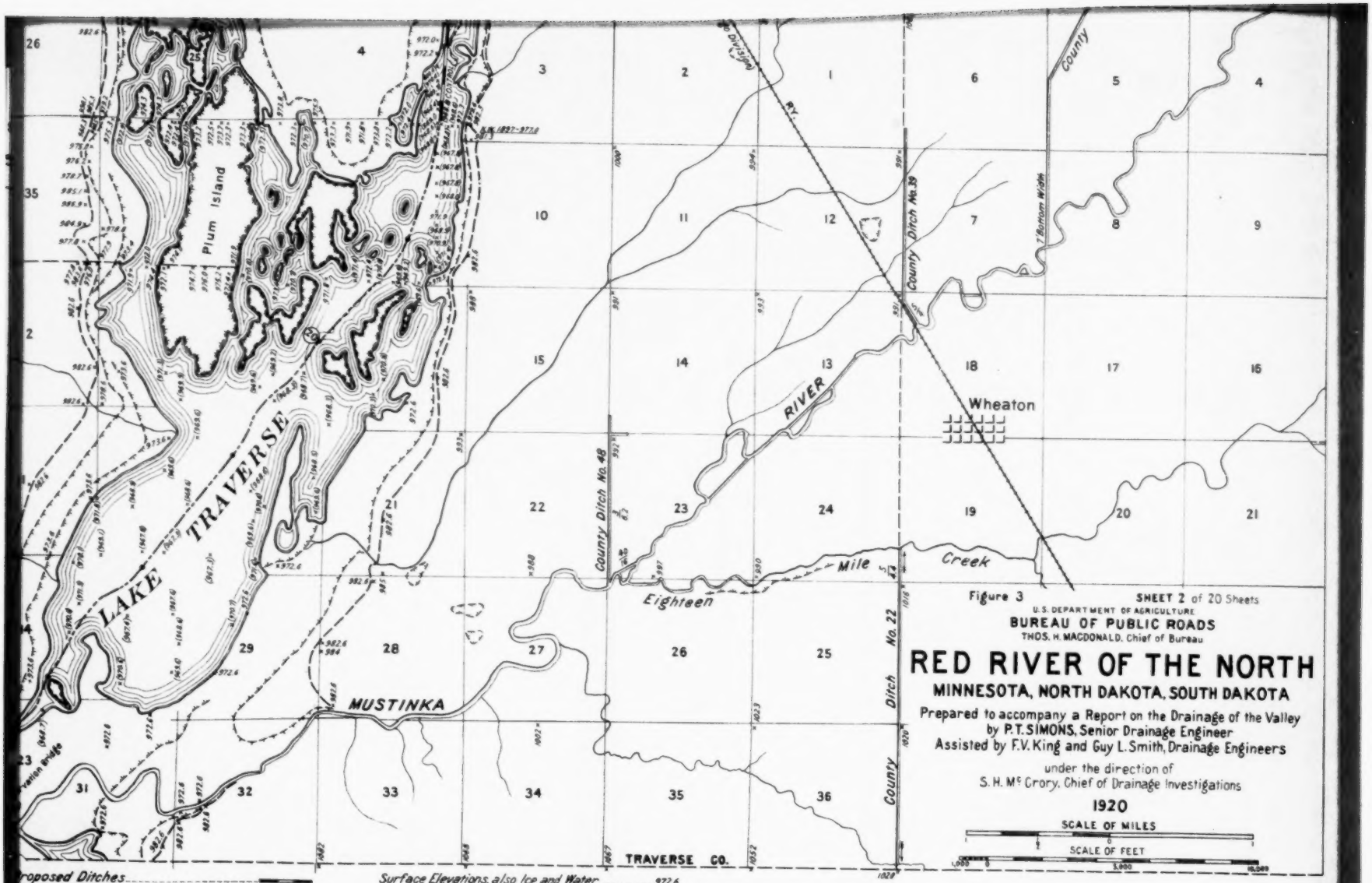


Figure 3

SHEET 2 of 20 Sheets

U.S. DEPARTMENT OF AGRICULTURE

BUREAU OF PUBLIC ROADS

THOS. H. MACDONALD, Chief of Bureau

RED RIVER OF THE NORTH

MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA

Prepared to accompany a Report on the Drainage of the Valley
by P. T. SIMONS, Senior Drainage Engineer
Assisted by F. V. King and Guy L. Smith, Drainage Engineers

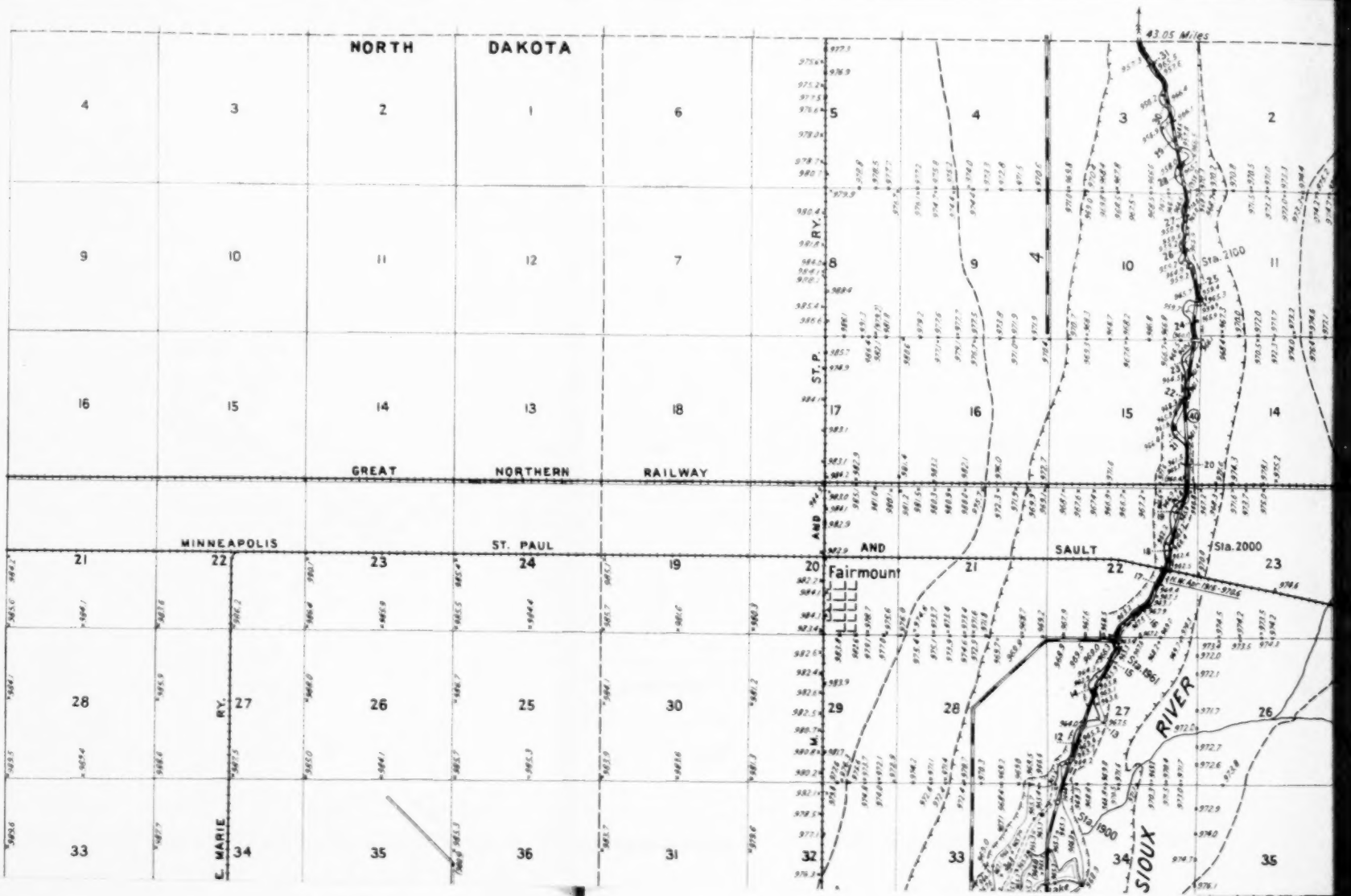
under the direction of
S. H. Mc Crory, Chief of Drainage Investigations

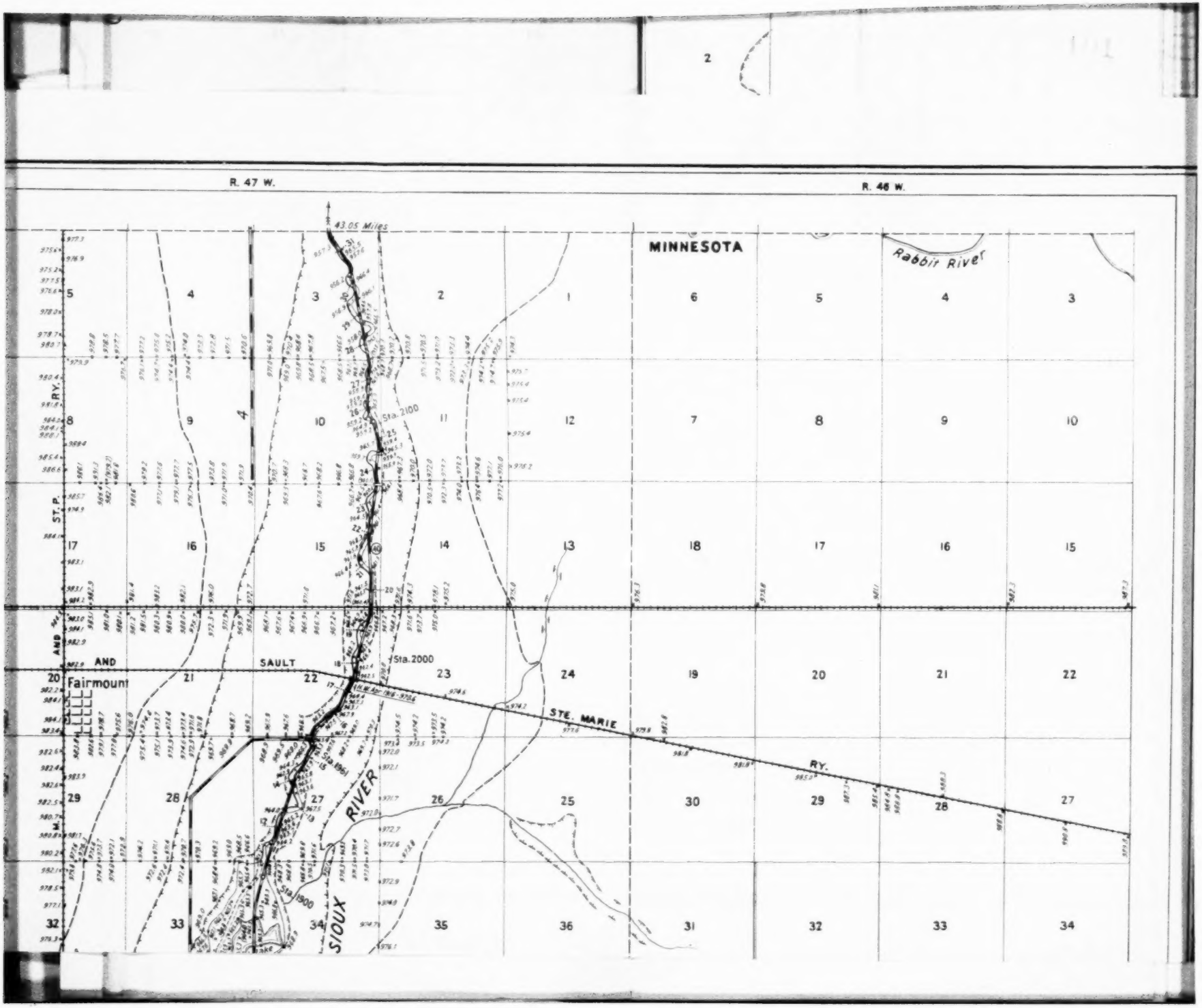
1920

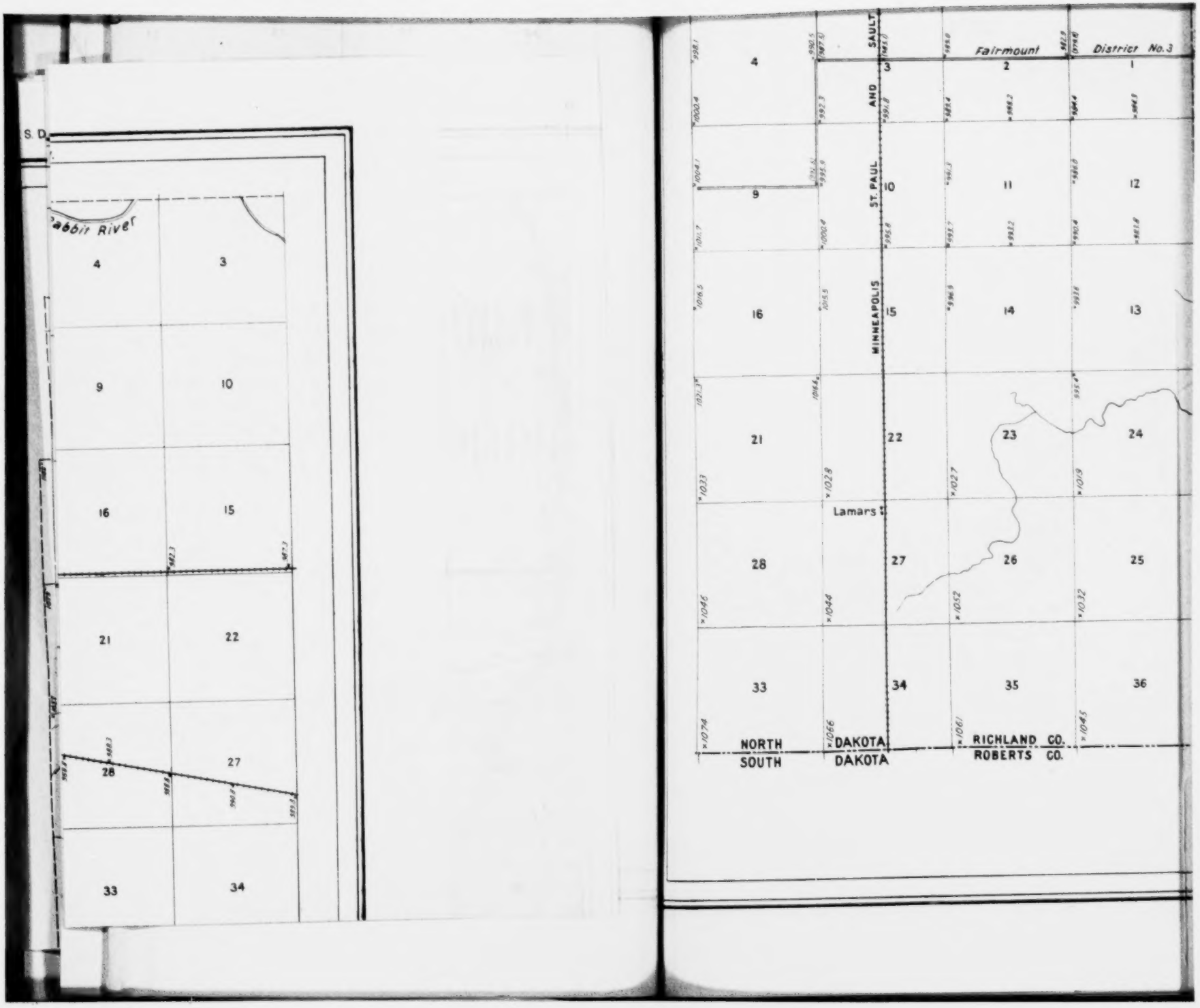
SCALE OF MILES

SCALE OF FEET

THE COLUMBIA PLANOGRAPH CO., WASH.


R. 48 W.
R. 47 W.
NORTH DAKOTA
GREAT NORTHERN RAILWAY
MINNEAPOLIS AND ST. PAUL RY.
ST. P. AND SAULT RY.
E. MARIE
Fairmount
RIVER
SIOUX
43.05 Miles
Sta. 2100
Sta. 2000
Sta. 1961
Sta. 1900
H.W. Apr. 1948 - 978.6


R. 47 W.
R. 46 W.
43.05 Miles
MINNESOTA
Rabbit River
Sta. 2100
Sta. 2000
Sta. 1900
AND SAULT STE. MARIE RY.
Fairmount
SIOUX RIVER
ST. P.
M.
RY.


S. D.
Rabbit River
4
3
9
10
16
15
21
22
28
27
33
34
SAULT
AND
ST. PAUL
MINNEAPOLIS
Fairmount
District No.3
4
3
2
1
9
10
11
12
16
15
14
13
21
22
23
24
Lamars
28
27
26
25
33
34
35
36
NORTH
SOUTH
DAKOTA
DAKOTA
RICHLAND CO.
ROBERTS CO.

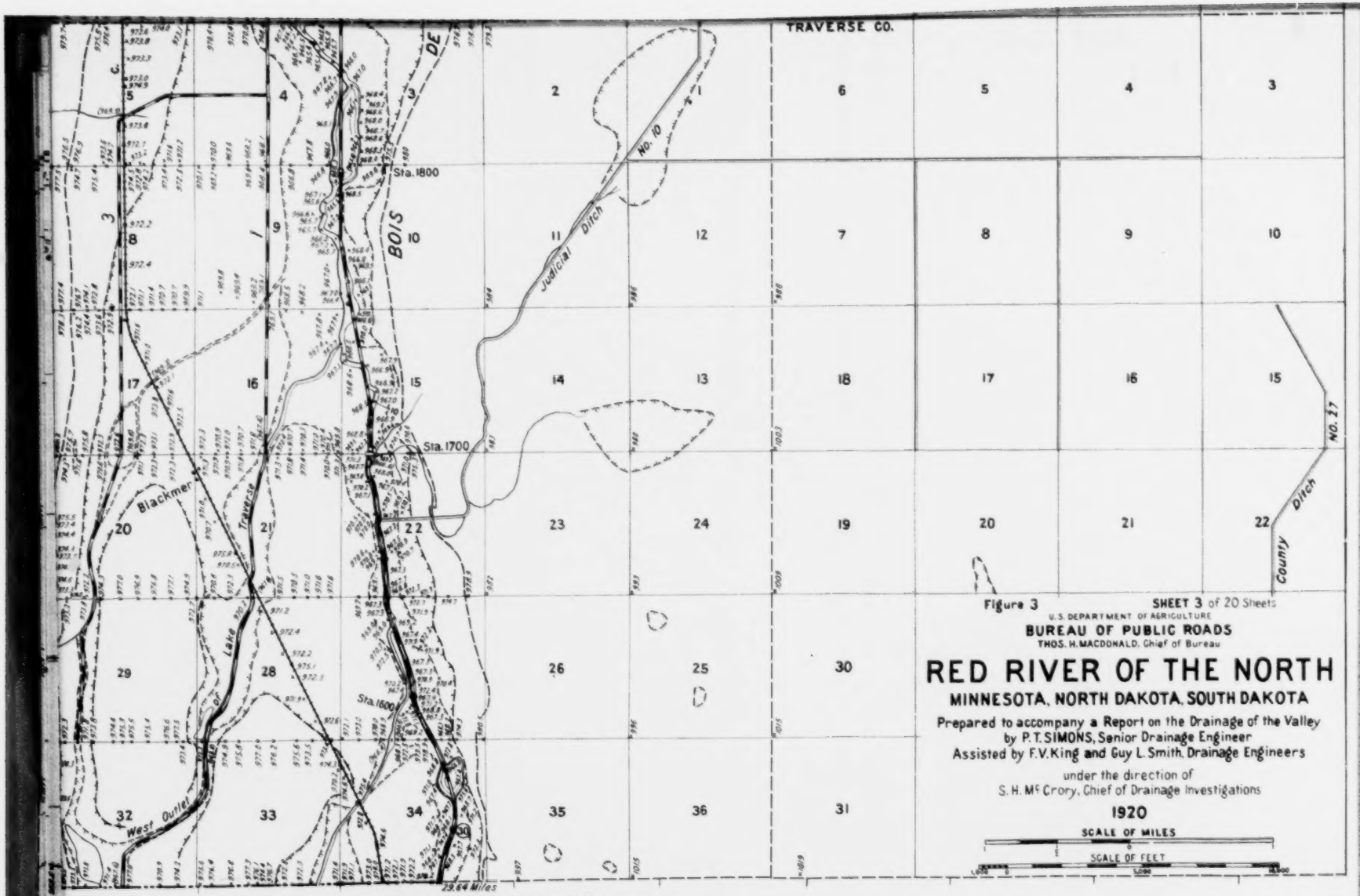


Figure 3

SHEET 3 of 20 Sheets

U.S. DEPARTMENT OF AGRICULTURE

BUREAU OF PUBLIC ROADS

THOS. H. MACDONALD, Chief of Bureau

RED RIVER OF THE NORTH

MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA

Prepared to accompany a Report on the Drainage of the Valley
by P. T. SIMONS, Senior Drainage Engineer
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under the direction of
S. H. Mc Crory, Chief of Drainage Investigations

1920

SCALE OF MILES

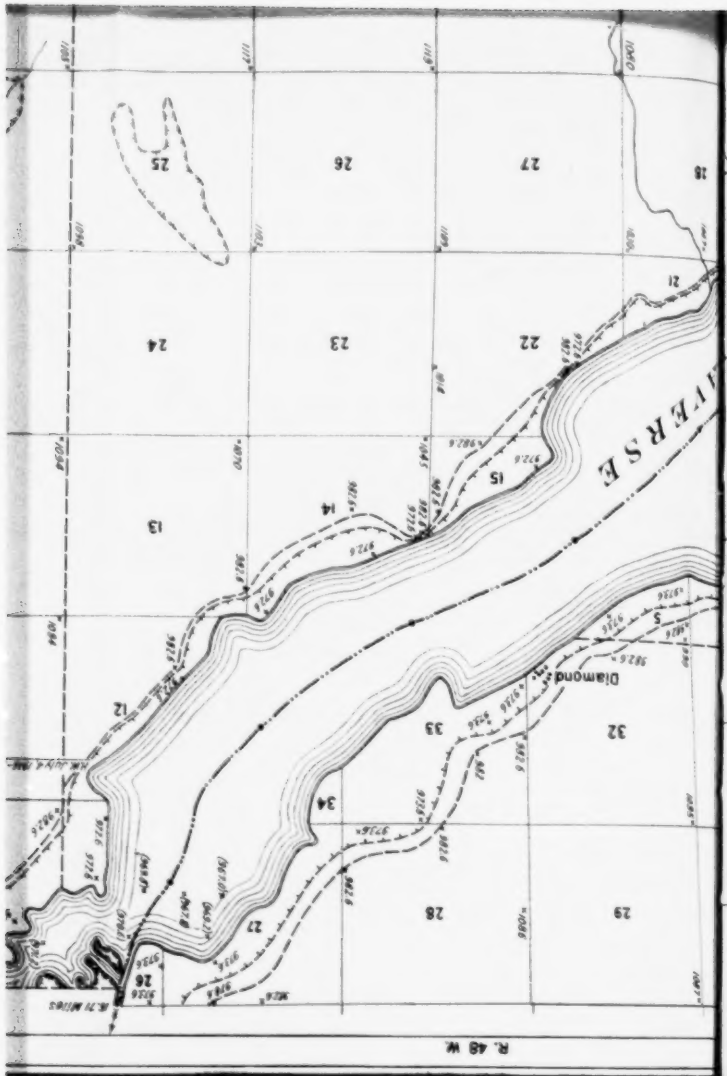
SCALE OF FEET

Ditches
Numbers — Sta. 1700
Line
above High Water
Swamp
bers — (30)

Surface Elevations, also Ice and Water — 966.1
Bottom Elevations — (965.2)
High Water Elevations — H.W. 1916 - 970.6
Cross Sections — 10
Size of Ditches — Bottom Width / Depth

Datum, Mean Sea Level, U.S.C. and G.S., 1912 Adjustment

THE COLUMBIA PLANOGRAPH CO., WASHINGTON



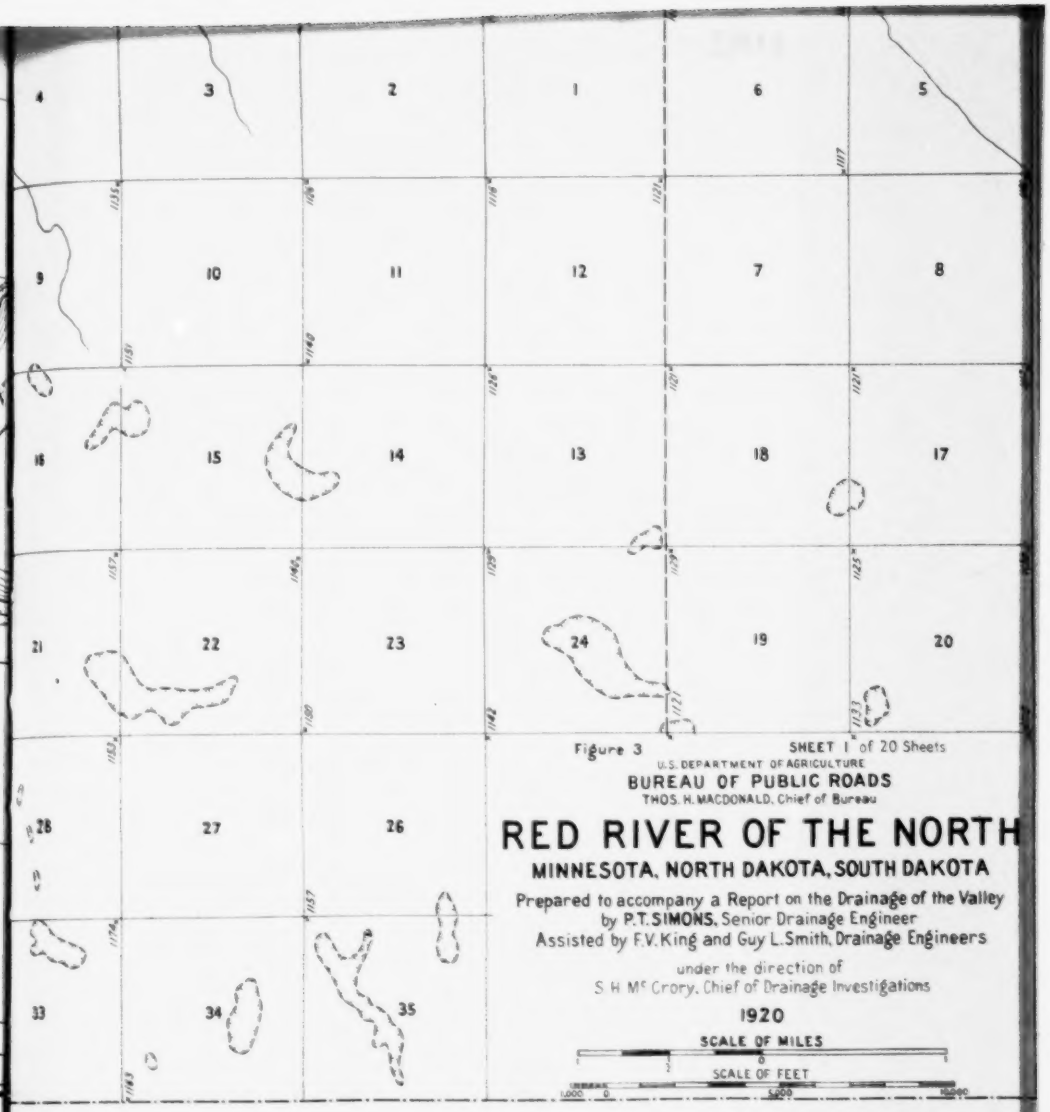


Figure 3

SHEET 1 of 20 Sheets

U.S. DEPARTMENT OF AGRICULTURE

BUREAU OF PUBLIC ROADS

THOS. H. MACDONALD, Chief of Bureau

RED RIVER OF THE NORTH

MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA

Prepared to accompany a Report on the Drainage of the Valley
by P.T. SIMONS, Senior Drainage Engineer
Assisted by F.V. King and Guy L. Smith, Drainage Engineers

under the direction of
S. H. Mc Crory, Chief of Drainage Investigations

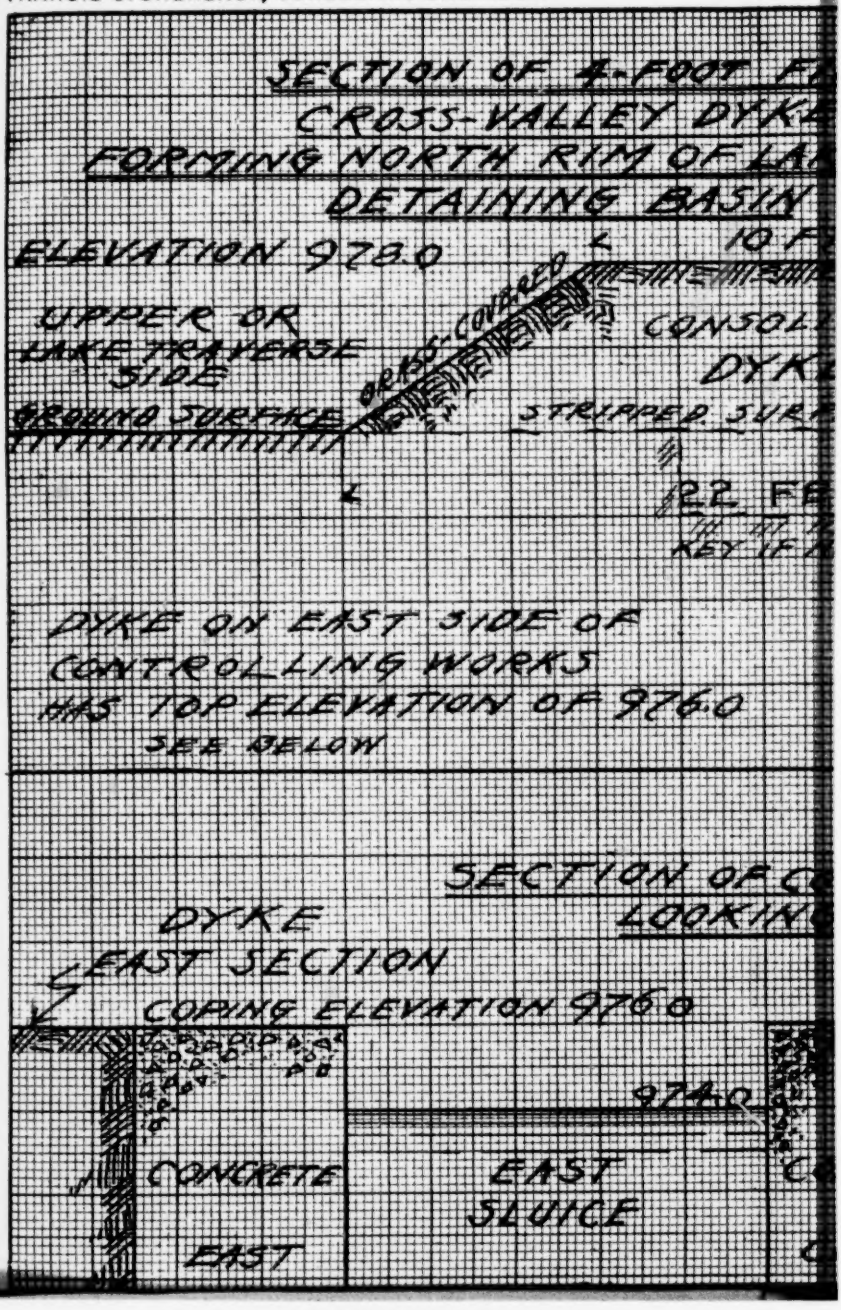
1920

SCALE OF MILES

SCALE OF FEET

Water 983.0
..... (979.3)
..... H.W. 1282 - 977.2
..... 4+
Bottom Width ..... ?
Depth ..... ?

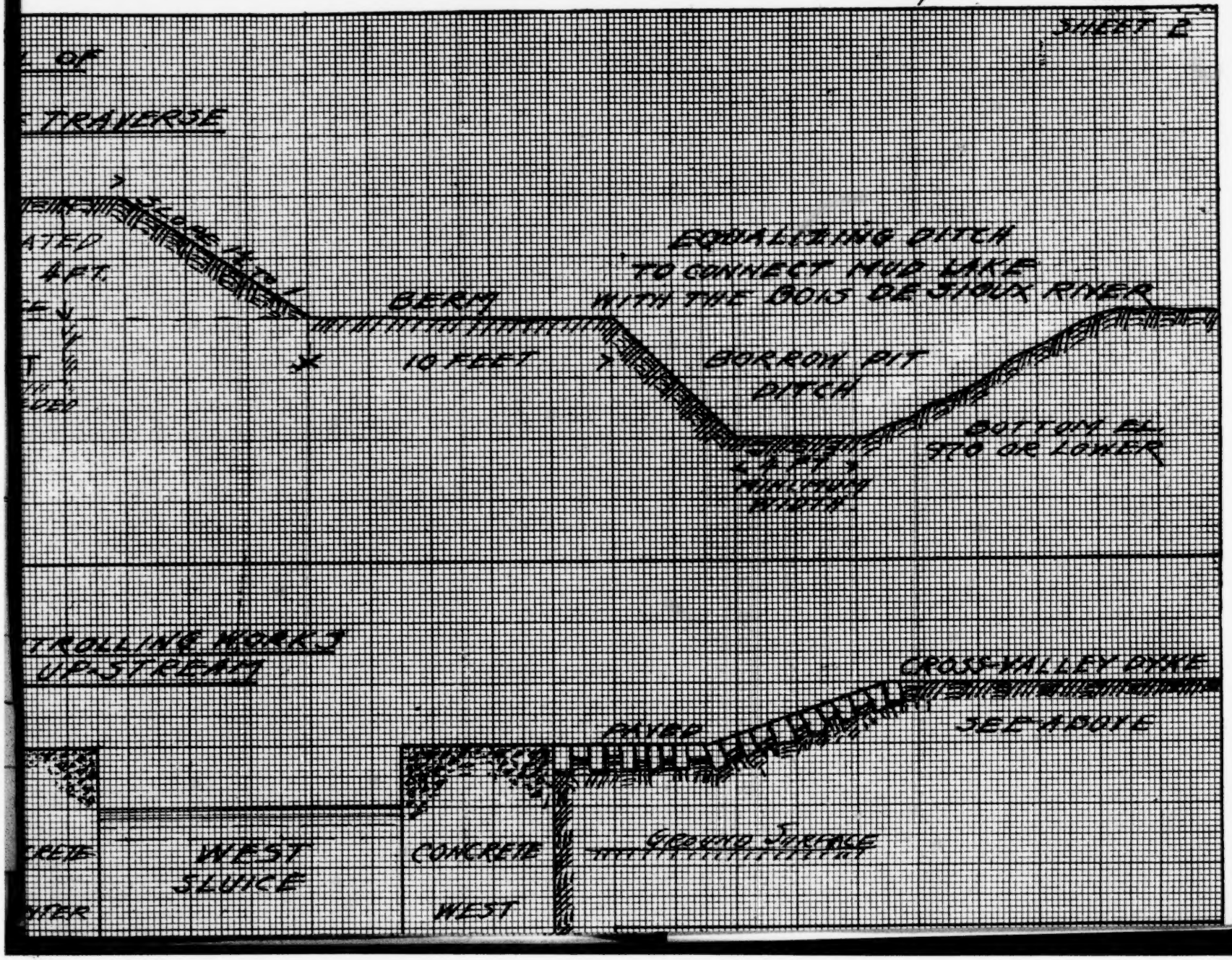
THE COLUMBIA PLANOGRAPH CO., WASHINGTON

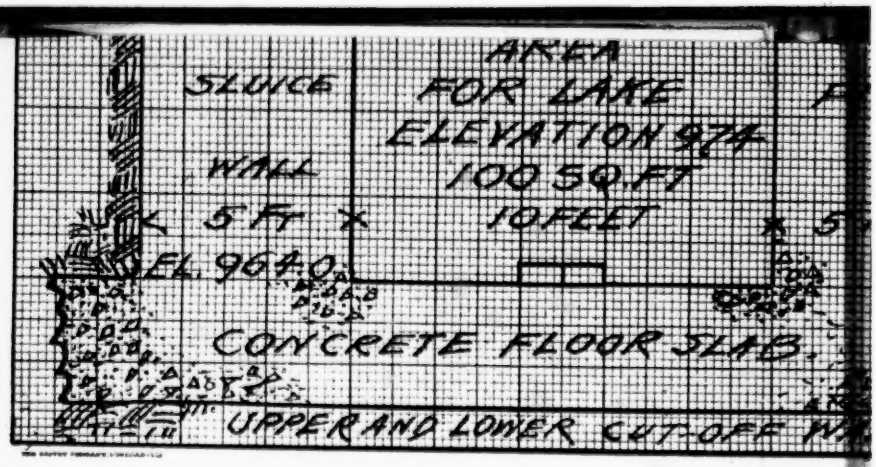

SECTION OF 4-FOOT F
CROSS-VALLEY DYKE
FORMING NORTH RIM OF LA
DETAINING BASIN
ELEVATION 978.0
10 F
UPPER OR
LAKE TRAVERSE
SIDE
CONSOL
DYKE
GROUND SURFACE
STRIPPED SUR
22 FE
KEY IF
DYKE ON EAST SIDE OF
CONTROLLING WORKS
HAS TOP ELEVATION OF 976.0
SEE BELOW
SECTION OF C
LOOKIN
DYKE
EAST SECTION
COPING ELEVATION 976.0
974.0
CONCRETE
EAST
SLUICE
EAST

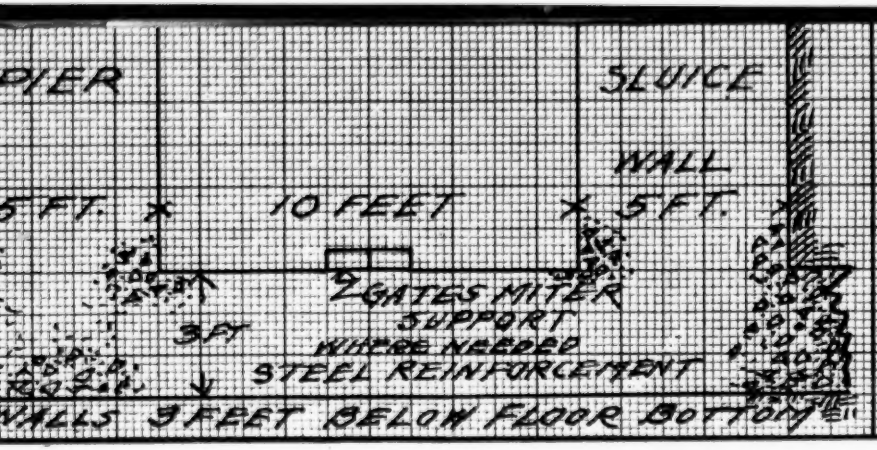
Comp. Ex. A6

MINNEAPOLIS

SHEET 2




SLUICE
WALL
5 FT X
EL. 964.0
AREA
FOR LAKE
ELEVATION 974
100 SQ. FT
10 FEET
CONCRETE FLOOR SLAB
UPPER AND LOWER CUT-OFF W



IN THE SUPREME COURT
OF THE UNITED STATES
N. DAKOTA VS. MINNESOTA

PROJECT
FOR REMEDIAL WORKS
CROSS-VALLEY DYKE
CONTROLLING WORKS

JULY 1922 SHENEHON

196

TOTAL RUNOFF
INCHES DEPTH ON DRAINAGE AREA

Month	1916		1917		1920		1921		1922	
	Mustinka at Wheaton	Red at Fargo	Mustinka at Wheaton	Red at Fargo	Mustinka at Wheaton	Red at Fargo	Mustinka at Wheaton	Red at Fargo	Mustinka at Wheaton	Red at Fargo
Mar.	---	---	---	---	.16	.32	---	---	.81	.46
Apr.	---	---	.92	.59	.04	.16	.06	.14	.40	.49
May	---	---	.24	.35	.12	.18	.02	.10	.04	.21
June	.30	.39	.03	.13	.15	.23	.01	.11	---	---
July	1.25	1.04	.00	.06	.13	.18	.00	.05	---	---
Aug.	16	.35	.00	.03	.01	.09	.00	.04	---	---
Sept.	.06	.23	.00	.02	.00	.08	.01	.03	---	---
Oct.	.05	.20	---	---	.00	.09	.00	.03	---	---
Nov.	.04	.11	---	---	---	---	---	---	---	---
Total:	1.86	2.32	1.19	1.18	0.81	1.33	0.10	0.50	1.25	1.16

Total Runoff for Period:

Mustinka River at Wheaton = 5.01

Red River at Fargo = 6.49

197

Defts. Exhibit a. z

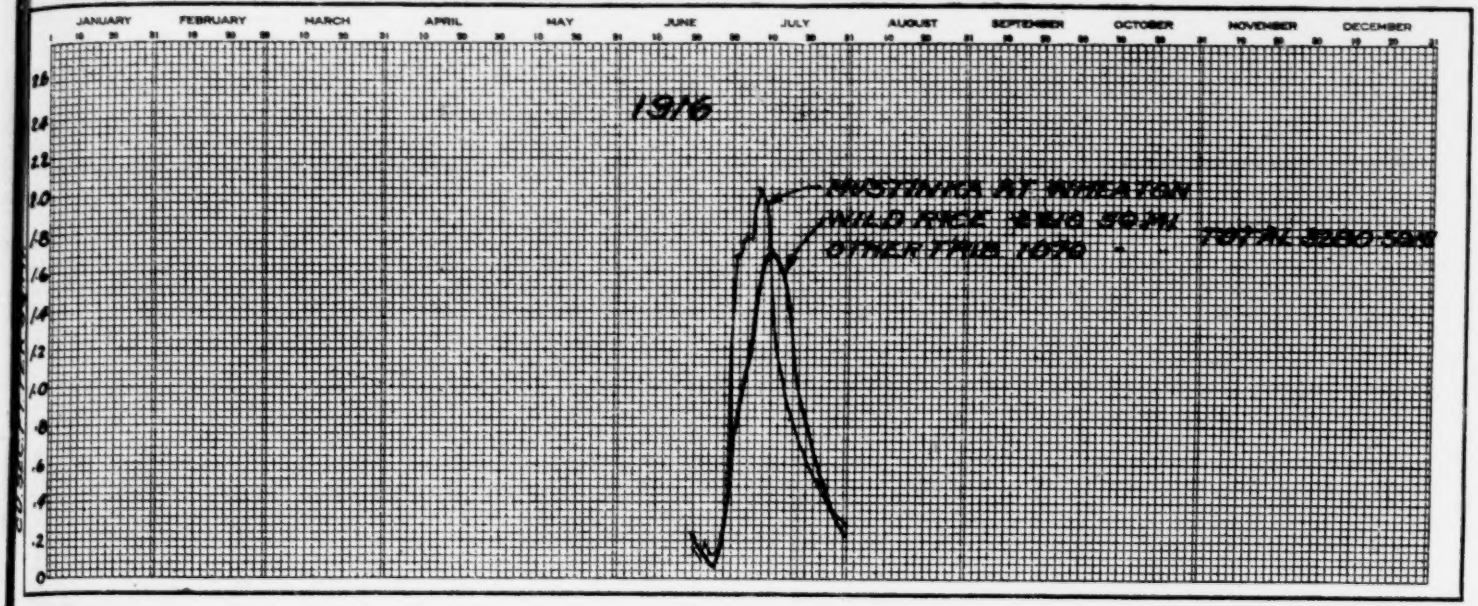
DATE OF OBSERVED FLOOD CRESTS

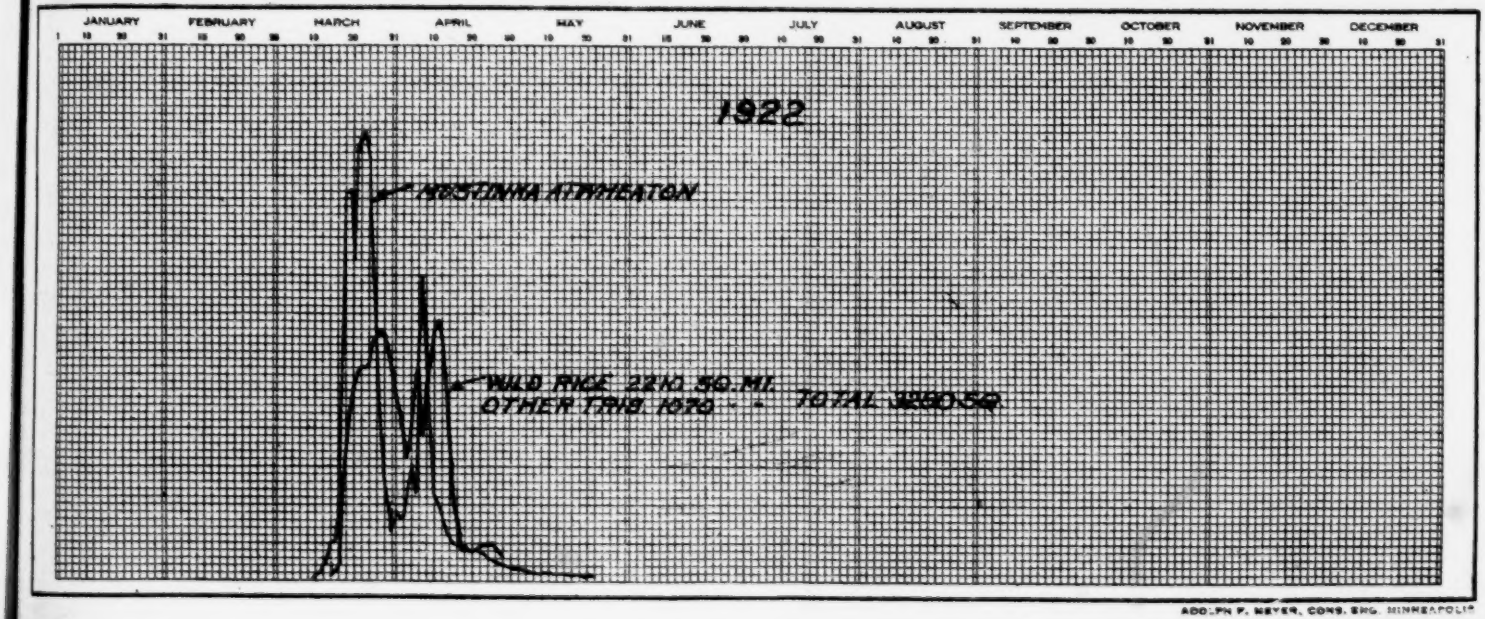
Year	Mustinka River at Wheaton, Minn. Area, 756 sq. mi.	Red River at Fargo, N.D. Area, 6,020 sq. mi.	Difference (days)
1916	July 7	July 11	4
1917	April 1	April 3-4	3
1920	March 24	March 27-28	4
1921	April 2	April 6	4
1922	March 23	March 27	4
"	April 7	April 11	4

198

Defendants Exhibit A-3

Dft 8x A-4

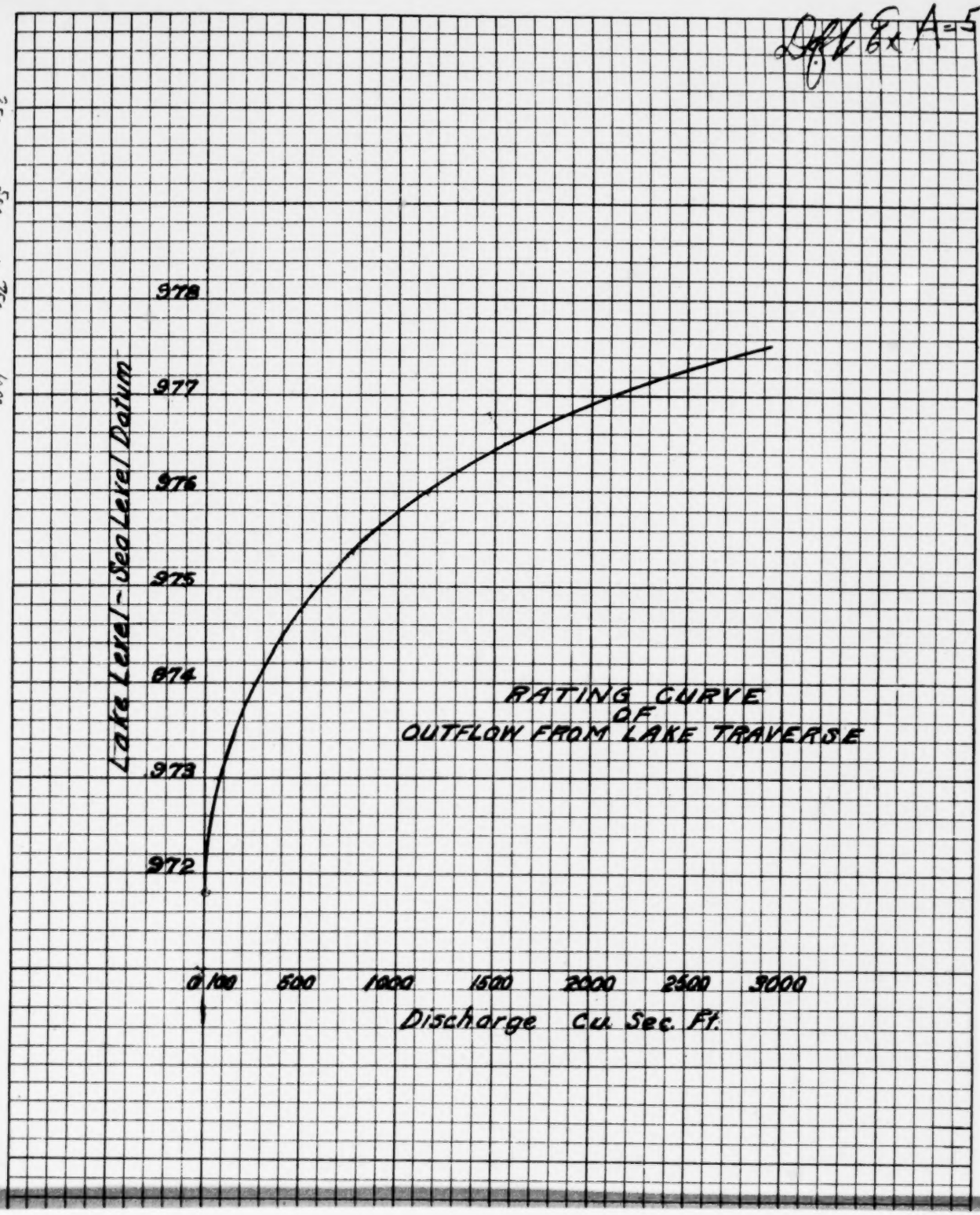




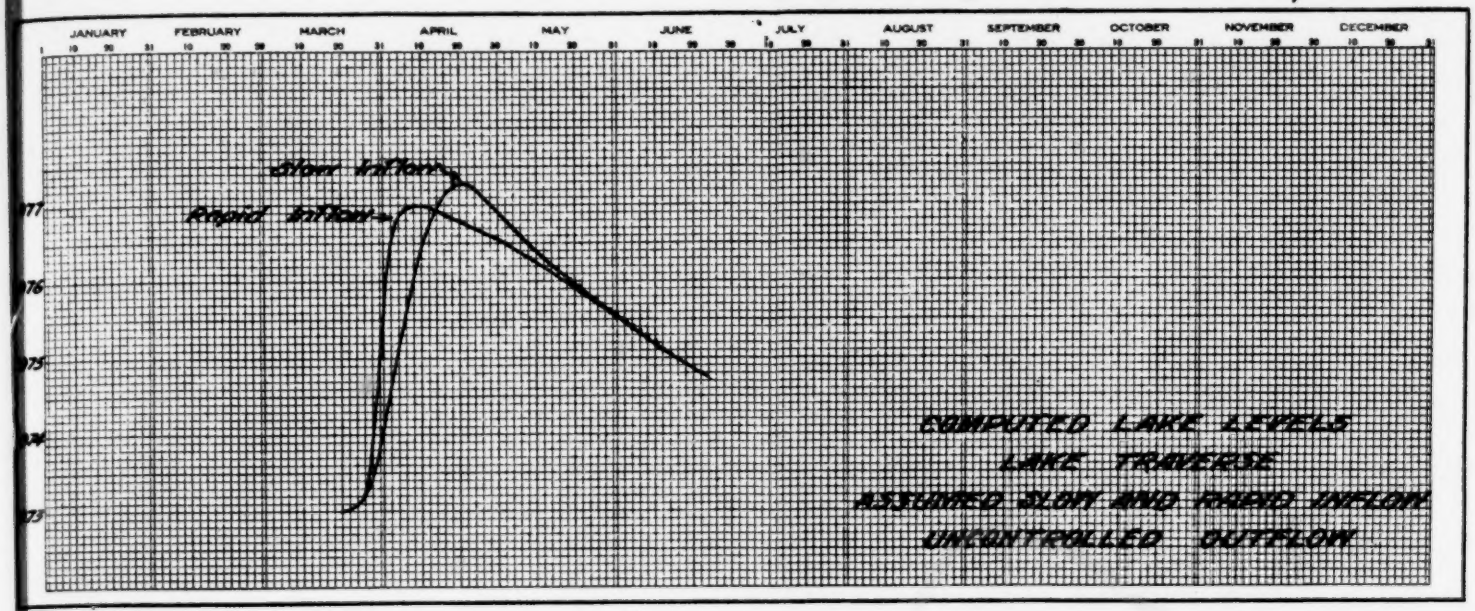
ADOLPH F. MEYER, CONS. ENG. MINNEAPOLIS

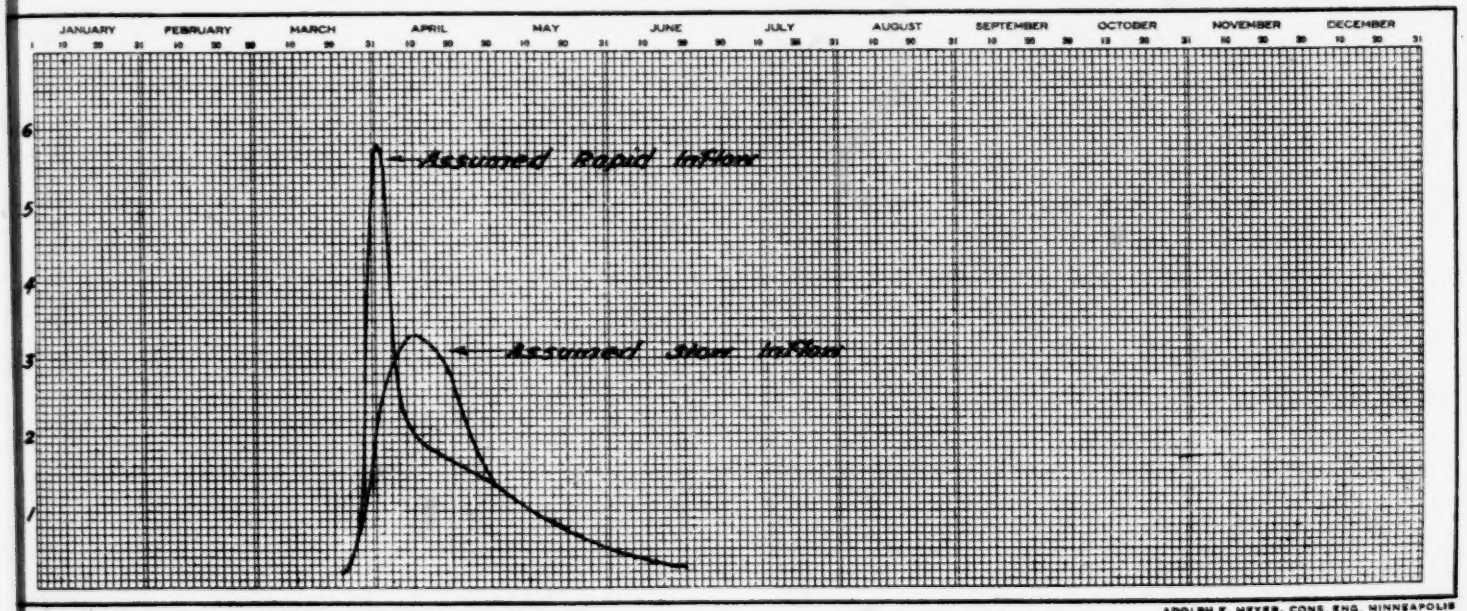
199

Exh. 6 A-5


RATING CURVE
OF
OUTFLOW FROM LAKE TRAVERSE
Lake Level - Sea Level Datum
978
977
976
975
974
973
972
0
100
500
1000
1500
2000
2500
3000
Discharge Cu. Sec. Ft.

Dft Ex A=6

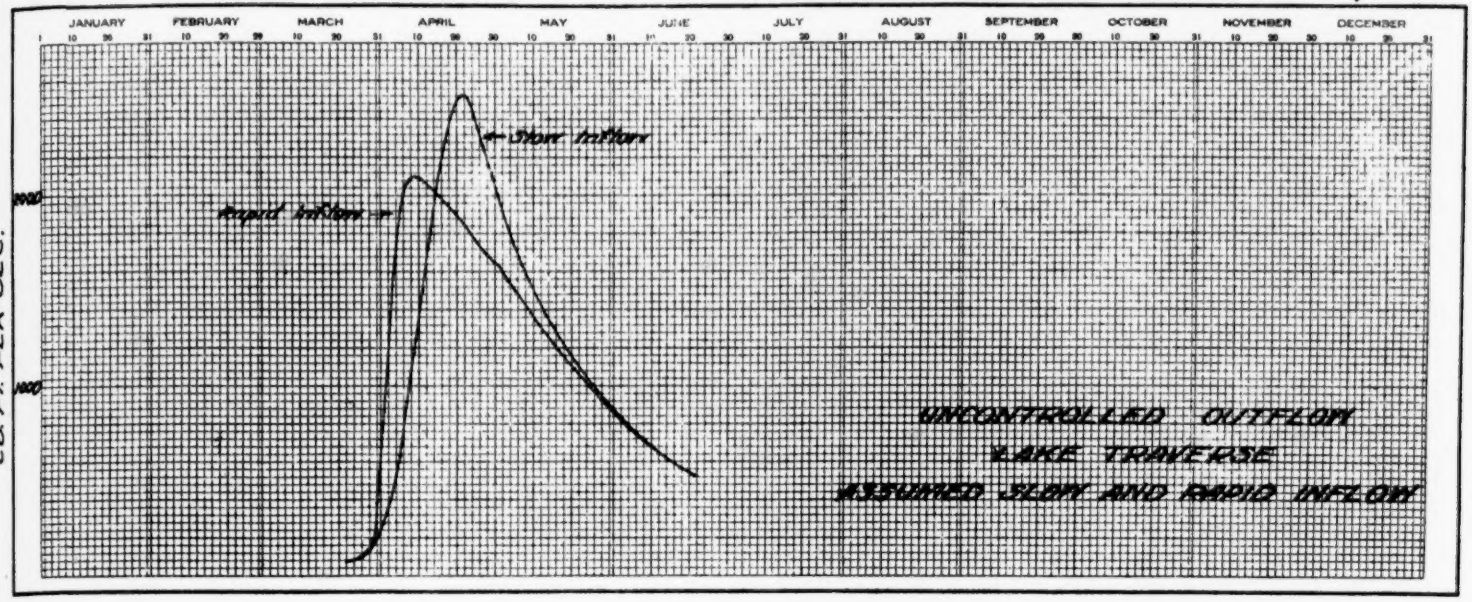


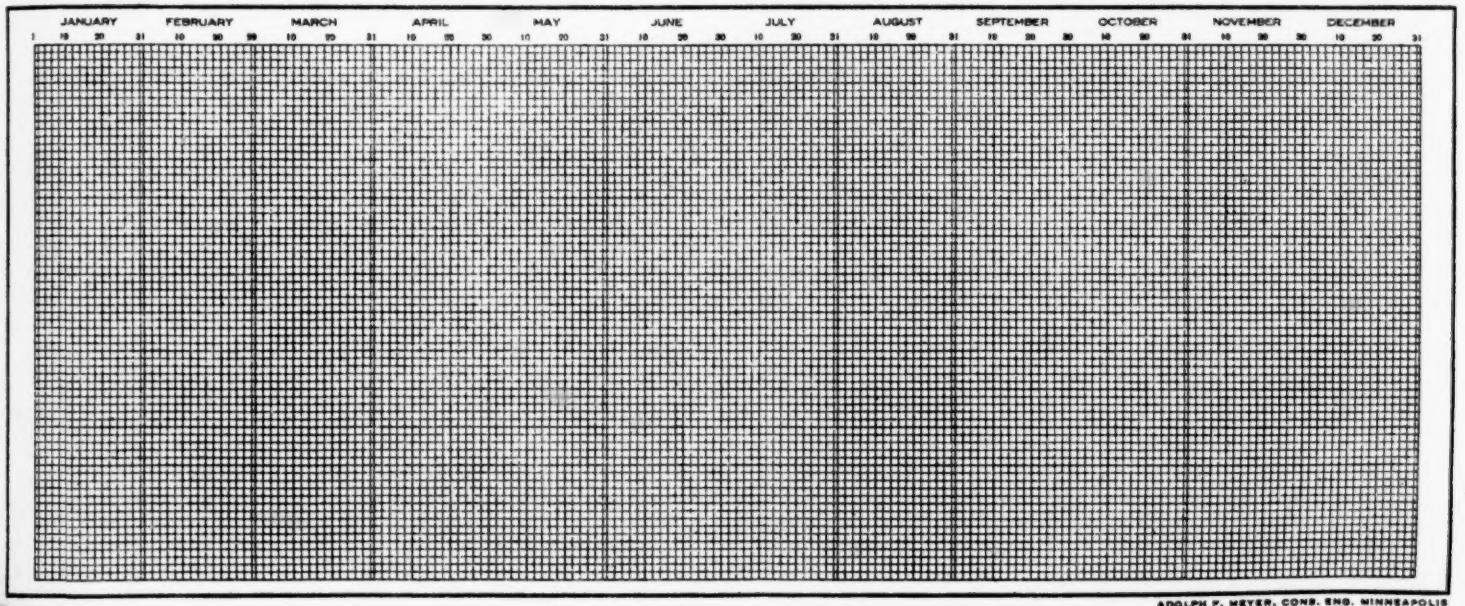


ADOLPH F. MEYER, CONS. ENG. MINNEAPOLIS

201

Dep Ex 4





ADOLPH F. MEYER, CONS. ENG. MINNEAPOLIS

206

Dpt Ex A:8

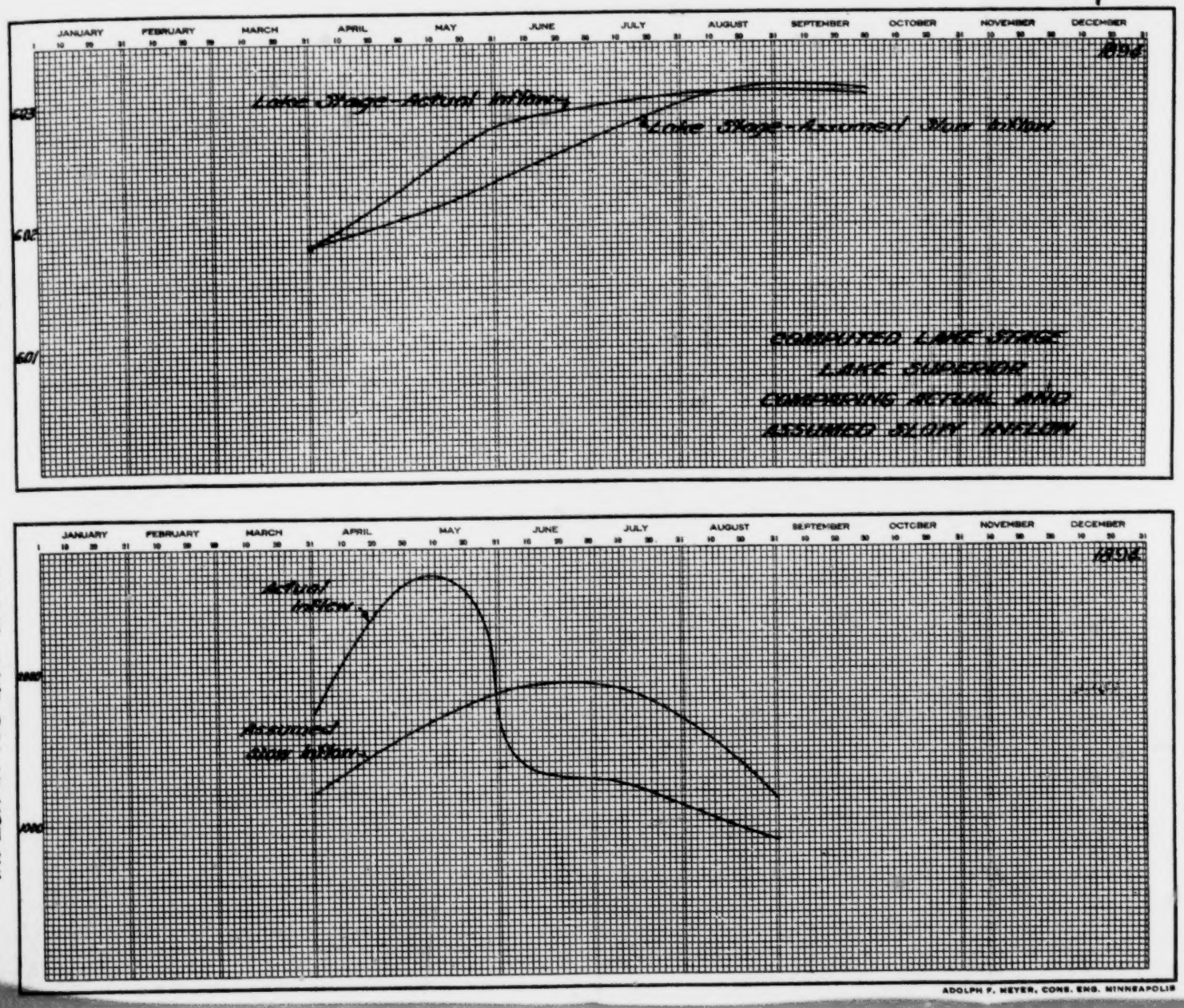
COMPUTED LEVELS OF LAKE TRAVERSE
for

	RAPID INFLOW				SLOW INFLOW			
Date	Inflow for two Days (c.f.s.)	Outflow for two Days (c.f.s.)	Change in Lake Stage (feet)	Lake Stage (feet)	Inflow for two Days (c.f.s.)	Outflow for two Days (c.f.s.)	Change in Lake Stage (feet)	Lake Stage (feet)
March 20	---	---	----	973.000	---	---	----	973.000
March 22	360	150	.028	973.028	360	150	.028	973.028
March 24	600	160	.059	973.087	600	160	.059	973.087
March 26	1500	180	.174	973.261	1200	180	.135	973.222
March 28	5400	330	.64	973.901	2100	250	.240	973.462
March 30	10800	770	1.15	975.06	3600	400	.400	973.862
April 1	11400	1720	1.00	976.06	4500	550	.472	974.334
April 3	9600	2925	0.647	976.707	5400	860	.520	974.854
April 5	6000	3800	.206	976.913	5850	1260	.497	975.351
April 7	4800	4140	.062	976.975	6300	1770	.469	975.820
April 9	4200	4200	.000	*976.975	6600	2360	.421	976.241
April 11	3900	4140	.011	976.964	6600	3000	.348	976.589
April 13	3680	4100	.039	976.925	6450	3650	.270	976.859
April 15	3600	4000	.038	976.887	6300	4150	.200	977.059
April 17	3480	3910	.040	976.847	6000	4570	.132	977.191
April 19	3360	3840	.046	976.802	5700	4900	.074	977.265
April 21	3240	3750	.048	976.754	5100	5050	.008	*977.273
April 23	3120	3680	.047	976.707	4500	5000	.046	977.227
April 25	3000	3620	.049	976.658	3900	4750	.079	977.148
April 27	2880	3420	.050	976.608	3450	4380	.059	977.089
April 29	2760	3320	.054	976.554	3150	4230	.050	977.039
May 1	2700	3230	.052	976.503	2700	3980	.122	976.917

* Highest level reached.

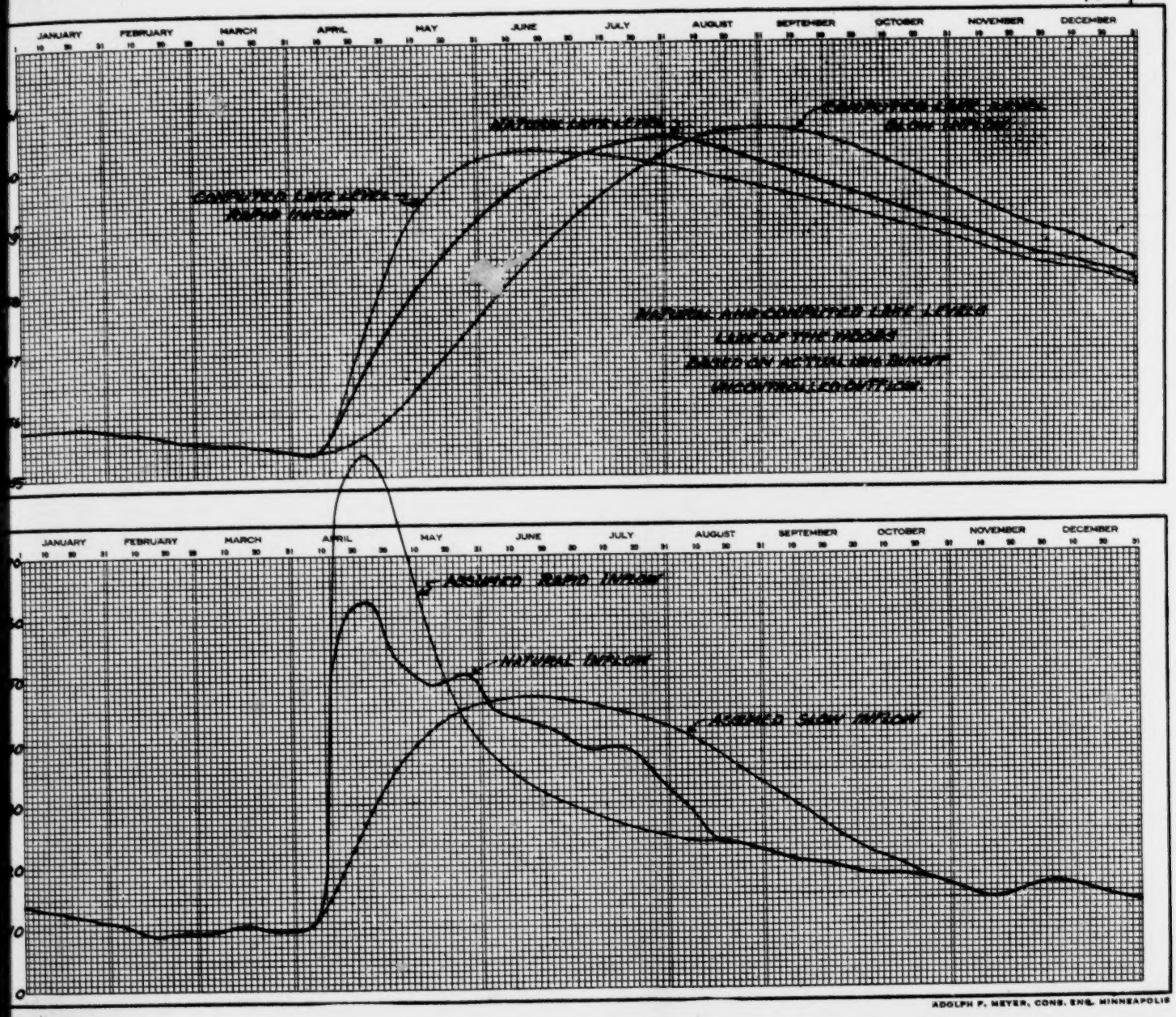
Computations for both cases based on the same total inflow and unregulated outflow.

Deft. Ex. A-9


JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
1896
ELEVATION
Lake Stage-Actual Inflow
Lake Stage-Assumed Slow Inflow
COMPUTED LAKE STAGE
LAKE SUPERIOR
CONSERVING ACTUAL AND
ASSUMED SLOW INFLOW
INFLOW IN 100 C.F.S. UNITS
Actual Inflow
Assumed Slow Inflow
ADOLPH F. MEYER, CONS. ENG. MINNEAPOLIS

Dept E & A-10

205



EFFECT OF RATE OF INFLOW ON LAKE STAGE

LAKE OF THE WOODS

Def'ts Ex. A-14

BASED ON OBSERVED 1916 RUNOFF FROM TRIBUTARY DRAINAGE AREA OF 26,750 SQUARE MILES

(Equal total inflow and uncontrolled outflow used in each case)

Date	1916 Natural Inflow c.s.f.	1916 Natural Lake Level (End of Period)	1916 Assumed Rapid Inflow	1916 Resulting Lake Level (End of Period)	1916 Assumed Slow Inflow	1916 Resulting Lake Level (End of Period)
Jan. 1-10	13723	1055.83				
11-20	11287	55.79				
21-31	12133	55.77				
Feb. 1-10	9985	55.71				
11-20	8630	55.63				
21-29	9590	55.57				
Mar. 1-10	9899	55.52				
11-20	10660	55.49				
21-31	9561	55.43				
Apr. 1-10	10015	55.39				
11-20	56107	56.35	80,000	1056.77	18,500	1055.53
21-30	61301	57.32	85,000	58.17	29,000	55.89
May 1-10	51974	58.02	75,000	59.26	37,000	56.39
11-20	49390	58.61	65,000	59.84	42,000	56.96
21-31	50105	59.20	43,000	60.15	45,000	57.60
June 1-10	44690	59.58	36,000	60.26	46,500	58.16
11-20	43263	59.90	33,000	* 60.29	47,000	58.69
21-30	41457	60.14	31,000	60.27	46,500	59.16
July 1-10	38739	60.30	28,500	60.20	46,000	59.58
11-20	39083	60.44	26,500	60.12	44,500	59.92
21-31	34755	* 60.48	25,000	60.00	43,000	60.22
Aug. 1-10	29929	60.42	24,000	59.88	41,000	60.42
11-20	22819	60.23	23,000	59.76	38,000	60.54
21-31	23341	60.05	23,341	59.65	35,000	* 60.57
Sept. 1-10	20603	59.87	20,603	59.51	31,000	60.55
11-20	20068	59.69	20,068	59.38	28,000	60.46
21-30	18665	59.50	18,665	59.22	24,000	60.29
Oct. 1-10	18198	59.33	18,198	59.08	21,000	60.08
11-20	18714	59.19	18,714	58.97	20,000	59.88
21-31	17470	59.01	17,470	58.83	17,500	59.63
Nov. 1-10	15061	58.83	15,061	58.67	15,061	59.38
11-20	14097	58.65	14,097	58.50	14,097	59.15
21-30	16548	58.52	16,548	58.39	16,548	58.98
Dec. 1-10	16903	58.42	16,903	58.31	16,903	58.83
11-20	15158	58.28	15,158	58.19	15,158	58.66
21-31	13935	1058.11	13,935	1058.06	13,935	1058.47

(Natural conditions assumed to prevail to April 10)

* Highest stage reached in year.

Defendants Exhibit A-14

COMPUTED LEVELS OF LAKE SUPERIOR

COMPARING RAPID AND SLOW INFLOW

	BASIS OF ACTUAL INFLOW				BASIS OF ASSUMED SLOW INFLOW			
Month	Actual Inflow	Outflow	Change in Stage	Lake Stage at end of Month	Assumed Inflow	Outflow	Change in Stage	Lake Stage at end of Month
March	----	---	----	1.835	----	---	----	1.835
April	2220	630	+.47	2.305	1400	630	+.23	2.065
May	2520	770	+.515	2.820	1700	680	+.30	2.365
June	1350	850	+.15	2.970	1900	770	+.335	2.700
July	1220	890	+.10	3.070	1840	840	+.29	2.990
August	980	895	+.02	3.090	1450	895	+.16	3.150
September	770	890	-.03	3.060	770	890	-.03	3.120
Totals - April 1st to time of crest - end of August;	8290	4025			8290	3815		

Inflow and Outflow Quantities Given in 100 c.s.f. Units.

Inflow Shown is That for Year 1894, Taken From the Report of the International Waterways Commission on Regulation of Lake Erie - 1910.

Both Computations are Based on the Same Relation Between Lake Stage and Outflow.

Dofs Exhibit-C-13

Supreme Court of the United States.

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,
Defendant.

To the Honorable the Justices of the Supreme Court of the United States:

Your orator, the State of North Dakota, by Henry J. Linde, its Attorney General, duly appointed and commissioned by law, brings this its Bill of Complaint by direction of the Governor of said state against the State of Minnesota and thereupon complains and alleges as follows:

First: That your orator, the State of North Dakota, was and is duly and regularly organized and admitted as one of the States of the United States under the Act of Congress of February 22nd, 1889. That the defendant, the State of Minnesota was and is duly and regularly organized and admitted as one of the States of the United States under an Act of Congress of March 3rd, 1849.

Second: That a controversy has arisen between the State of North Dakota and the State of Minnesota in respect to the trespasses and other unlawful acts of the last named State, hereinafter and in this Bill more fully alleged, within the original civil and equitable jurisdiction of this court.

Third: That the State of Minnesota is bounded on the west by the States of North Dakota and South Dakota; that the boundary between the States of North Dakota and Minnesota in the section involved in this proceeding, is a line extending through Lake Traverse, located immediately south of the southerly line of the State of North Dakota and thence following in a general northerly direction, the main channel of the Bois de Sioux River. That the general character of the territory along and on both sides of said boundary line, at the point here in controversy, is that of a practically level prairie formation, sloping gradually toward the north with a fall of approximately one (1) foot to the mile, and having an average mesne elevation of nine hundred and seventy (970) feet above sea level.

Fourth: That the above described Lake Traverse was and is, under ordinary and natural conditions, a low, shallow body of water, a large part of whose area was essentially a marsh, the waters thereof having a mesne sur-

face elevation of nine hundred and seventy (970) feet above the sea level. That the Bois de Sioux River was and is the outlet of said lake, the direction of flow of the waters of both said lake and river being toward the north. That at all times previously to the commission of the unlawful acts hereinafter alleged, the said last named river, between said lake and the mouth of the Rabbit river, through the section here in controversy was a narrow, shallow stream with relatively insignificant depth of channel and without well defined banks, its width varying at different seasons of the year according to the stage of water therein; that except for periods of abnormally high stages of water, the depth of the channel of said river never exceeded a few feet and its width was limited and varied from one (1) to four (4) rods; that during the stages of high water due to spring freshets, etc., the level of its waters was raised above its banks, resulting in the overflow of a limited area along its course but that such overflow was for such comparatively brief periods in point of time and of so limited character in extent as to cause no serious or permanent damage or injury to any of the lands bordering the same and situated within the State of North Dakota.

Fifth: That the prairie formation, in the depression whereof the said Lake Traverse is

located and through which the said Bois de Sioux River runs, as aforesaid, extends in a general northerly and southerly direction on both sides of said last named river in the States of North Dakota and Minnesota. That on the west of said river, such prairie formation extends for many miles within the State of North Dakota, with a general slope toward said river and toward the north, the mesne elevation thereof, in the section here involved, being only slightly above the level of the water of said river at the latter's normal stage. That on the east of said river, such prairie formation within the State of Minnesota, similarly parallels the course of the river for many miles, with a width east and west of approximately twenty (20) miles. That the general slope of the entire area last mentioned within the State of Minnesota, is toward said lake and river and toward the north, and the average elevation of the easterly line thereof, approximately forty (40) feet above the level of said lake and river. That for convenience the area last described within the State of Minnesota, will hereafter be referred to and termed as the "prairie zone."

Sixth: That immediately east of such prairie zone in the State of Minnesota, paralleling that zone north and south for many miles and with an average width east and west of ap-

proximately ten (10) miles, lays a higher area or region of rough, broken, hilly country interspersed with numerous lakes, rivers, streams and other natural water courses, having an average elevation of approximately twelve hundred (1,200) feet above sea level. That the general slope of the northerly portion of said area is to the south and west, and that of the southerly portion thereof, north and west, toward the said Lake Traverse and the Bois de Sioux River. That the natural flow and drainage of the entire waters of said area is toward and into said lake and river, the latter furnishing the outlet therefor; all such waters in reaching such outlet, passing or flowing over and through the prairie zone above described. That for purpose of convenience the area last hereinabove described will hereafter be referred to and termed as the "moraine zone."

Seventh: That owing to the natural conformation of said moraine zone, all of the waters thereof, both surface and those following the natural and well defined water courses therein and whether originating in the northern or southern portion thereof, had, under normal and natural conditions, a common confluence in the level and comparatively low area of the prairie zone located at or near the eastern margin thereof, in and around Township

One Hundred Twenty-seven (127), north of Range Forty-five (45) west, at which point, following spring freshets and excessive rain falls, such waters were accumulated and collected in great volume, overflowing and inundating an area of upwards of forty (40) square miles. That the area of such common confluence and overflow will, for convenience, be hereinafter referred to and termed the "delta zone."

Eighth: That as a result of said overflow last hereinabove alleged, many thousands of acres of land in the State of Minnesota comprising the area of said delta zone and vicinity were, previously to the construction of the system of artificial canals or ditches hereinafter described, more or less permanently inundated or saturated, a large part of such area comprising marsh or swamp lands.

Ninth: That the accumulated waters of said delta zone under the normal and natural conditions existing previously to the construction of the system of artificial canals or ditches hereinafter described, found their outlet to Lake Traverse and the Bois de Sioux River through two main natural depressions or channels, extending over and through said prairie zone and known respectively as the Mustinka and Rabbit Rivers. That the Mustinka River has two main branches, one

rising in the northern part of the said moraine zone and flowing south and west, and the other rising in the southern portion of said moraine zone and flowing north and west, these branches having a point of confluence in said delta zone where the main river runs in a general southerly and westerly direction through said delta zone and finds its outlet in Lake Traverse. That the Rabbit River has its source in said delta zone and runs in a general northerly and westerly direction having its outlet in the Bois de Sioux River. That the distance between the outlets of said two rivers, north and south, is approximately twenty-five (25) miles. That the Bois de Sioux River, north of the point of confluence with the waters of the said Rabbit River, is both wider and deeper, with high banks that are not subject to overflow, and has considerably greater fall, than south of such point of confluence and between it and the source of said river in Lake Traverse.

Tenth: That under normal and natural conditions, existing as aforesaid, the said Mustinka River was a narrow, shallow stream with no appreciable depth of channel and without well defined banks, following an irregular and sinuous course over and through said prairie zone to its outlet. That owing to the relatively flat and level character of the area trav-

ersed in its course, as well as its limited fall, the natural flow of the waters therein was slow and sluggish with a barely perceptible current. That the elevation of the said Rabbit River at its source in the delta zone was somewhat higher than that of the Mustinka River; that its channel was more clearly defined and its fall toward the Bois de Sioux River greater. That by reason of the natural conditions last stated, at ordinary stages, a great part of the waters accumulated and collected in said delta zone, as aforesaid, found their outlet through the Mustinka River, but at higher stages, the larger portion of such waters found their outlet and flowed through the Rabbit River and thence, as stated, into the Bois de Sioux. That the Rabbit River, under normal conditions constituted an overflow channel for the accumulated waters of said delta zone and an outlet, as aforesaid, for the larger portion thereof.

Eleventh: That the area of the State of Minnesota embraced and comprised in the several above described zones is upwards of seven hundred fifty (750) square miles, all whereof constituted and was and is commonly known as the Mustinka River Watershed. That under normal and natural conditions independent of those of artificial creation, the flow of all the waters of said area, from whatsoever

source originating, was as hereinabove and in this Bill alleged; that owing to the natural character and level formation of said prairie zone necessarily traversed by such waters in reaching their outlet in Lake Traverse and the Bois de Sioux River, the drainage of said delta zone was slow and gradual, extending over considerable periods of time in each year and by reason of the same conditions, the volume of water reaching the above described outlets in said lake and river was never such as to appreciably exceed their capacity or cause other than purely temporary and limited overflowage. That except as said waters, accumulated as aforesaid, in the general region of the delta zone, were, by reason of the physical conditions hereinabove described, more or less permanently stored there, all thereof found their outlet and were accommodated and disposed of through the natural channels and flowage hereinabove mentioned.

Twelfth: That the conditions hereinabove alleged had existed for many years previous to the construction of the system of canals and ditches by the State of Minnesota hereinafter alleged; that during that period the entire area in the State of North Dakota herein in question, extending along the westerly bank of the Bois de Sioux River and comprising upwards of twelve thousand (12,000) acres, had

been settled and improved by the public and citizens of the last named State; that said lands had been for upwards of thirty (30) years, held, owned, occupied, improved and used for the ordinary purposes of husbandry and agriculture, during all of which period the natural conditions with respect to the adjacent area within the State of Minnesota and the waters thereof, had, at all times, continued substantially as hereinabove described. That during said period, all that portion of the lands in the State of North Dakota, as indicated in yellow on the map, Exhibit "A", hereto attached and hereby made part hereof, were held and owned and at the commencement hereof, are held and owned by citizens of the State of North Dakota under titles acquired from the Government of the United States and from individuals. That said lands were amongst the most valuable, fertile and productive comprised within the entire area of the State of North Dakota. That at the date of the commission of the trespass herein complained of, there were embraced within said area approximately eighty farms, all whereof were improved and in high state of cultivation. That there were erected and in use thereon, various farm structures and improvements exceeding in value Two Hundred and Fifty Thousand ($250,000) Dollars and

that said lands, exclusive of such improvements exceeded in value One Million ($1,000,000) Dollars. That there had also been constructed on said lands by public authority, various public improvements, including highways, bridges, culverts, public buildings, etc., the value whereof exceeded Thirty-five Thousand ($35,000) Dollars. That in the year 1914 there were assessed and collected upon the privately owned lands and improvements within said area for state and municipal taxes, approximately Five Thousand ($5,000) Dollars.

Thirteenth: That previously to the year 1900, the State of Minnesota with the ostensible object and purpose of draining and reclaiming a large area of swamp and overflowed land belonging to that State in the immediate area or region of the above described delta zone, caused to be constructed a canal or ditch, known as the Mustinka State Ditch, extending in a general easterly and westerly direction from approximately Section Twenty (20), Township One Hundred Twenty-eight (128), Range Forty-four (44) west to Section Eighteen (18), Township One Hundred Forty-eight (148), Range Forty-five (45) west, a distance of some seven (7) miles; that the canal or ditch so constructed intersected the Mustinka River at several points and shortened its channel many miles by cutting off a large de-

tour thereof to the north. That such canal or ditch had an average width of thirty-six (36) feet and an average depth of eight (8) feet and a fall from east to west of approximately three (3) feet to the mile; that as a result of the construction thereof, the flow of the waters in said delta zone were accelerated both in respect to volume and time. That by reason of the inability of the natural outlets and water courses at and around the west end of such canal or ditch to accommodate and dispose of said additionally accumulated waters, a large area both to the north and south of said ditch, comprising upwards of seventy (70) square miles was more or less permanently overflowed and inundated. That in addition to the construction of the canal or ditch last mentioned, numerous other state and municipal ditches had been at or about the same time constructed in various parts of said watershed, all whereof found their outlet through the said first described Mustinka State Ditch and contributed to the concentration and accumulation of the waters in the vicinity thereof and the overflow of the region above indicated adjacent thereto.

Fourteenth: That the natural and only outlets for the accumulated waters last above indicated were those heretofore stated, viz: the channel or depression of the Mustinka River and the channel of the Rabbit River. That

the natural conditions of said outlets remained the same as heretofore stated. That owing to the level conformation of the said prairie zone through which the Mustinka River flows as well as the limited fall and tortuous course of that river, as aforesaid, the flow of said waters through that channel were relatively slow and a large portion thereof were disposed of by ordinary seepage and evaporation before reaching the said Lake Traverse. That the natural overflow of such waters, as aforesaid, found their outlet via the Rabbit River into the Bois de Sioux River as before and were cared for and disposed of through that channel. That the entire volume of water thus flowing into Lake Traverse and the Bois de Sioux River, as aforesaid, were insufficient to overtax the capacity of said lake and river and all thereof were disposed of without materially increasing the stage or level of water in either thereof at the point here in controversy and without damage or injury to the lands in the State of North Dakota to the west of and bordering the Bois de Sioux River, as aforesaid.

Fifteenth: That in 1911 and while the physical conditions were as last hereinabove alleged, the legislature of the State of Minnesota duly and regularly enacted a law of that State known as Chapter 138 of the General

Laws for 1911, entitled,—"An Act to Authorize the State Drainage Commission to Construct an Outlet for the Waters of the Mustinka State Ditch in Traverse County, Minnesota, and to Appropriate Money Therefor." That the Mustinka State Ditch in said title mentioned was and is the same as that hereinabove described. That the Preamble of said Act described the then existing conditions and the object and purpose of the enactment said Preamble and Act being as follows:

> "Whereas, a special committee consisting of five members of the house of representatives of the legislative session of the year 1909, duly appointed under the resolution of said house duly adopted and which authorized the appointment thereof for the purpose and which was duly empowered to administer oaths and take the testimony of certain petitioners, seventeen in number, and others, in relation thereto, after taking such testimony, duly found and reported to said house that upwards of eight thousand acres of fertile farming lands in Traverse county, Minnesota, including the lands of the said petitioners, situated adjacent to the Mustinka river in said county—previously under cultivation for about thirty years and during that time never overflowed—in the crop seasons of the years 1897 to 1908, were overflowed by overflow of the said Mustinka river; that such overflow of the said lands of the said petitioners and others during the said years, destroyed crops of the said petitioners to the value of

$28,302.00 and depreciated the value of the said lands overflowed, including the lands of the said petitioners, to an amount equal to the difference between forty dollars and fifteen dollars per acre; that the said overflows of the said river occasioned by and resulted from the construction of the Mustinka state ditch which was constructed by the State of Minnesota, during the years prior to 1896, but completed in said year, in order to drain lands situated in Grant county, Minnesota, then owned by the State of Minnesota, so as to make the said lands fertile, valuable and saleable, and for no other purpose; that the overflow of the said Mustinka state ditch is into the said Mustinka river whose channel is inadequate to take care thereof; that such overflows of said Mustinka state ditch and said Mustinka river have occurred each year since the construction of said ditch at times of rain or melting snow and will continue each year unless an adequate outlet for the surplus waters, brought to said Mustinka river as the result of the construction of said Mustinka state ditch, is constructed; that the waters which overflow lands in the vicinity of said Mustinka river collect in pools at various low places therein and become stagnant and a condition is thus created which is detrimental to the health of the people residing in the vicinity of the lands so overflowed and the same constitutes a menace to the public health and a public nuisance, in addition to being a private nuisance and injury to all persons owning lands overflowed thereby or residing in the vicinity of such overflowed land; that the nature of such injury and

nuisance is such that if caused by the act of an individual could and would be abated by action in the Courts and damages recovered therefor; that it is feasible to construct an adequate outlet for the waters of said Mustinka state ditch or for the surplus waters of said Mustinka river so as to abate said nuisance and injury and so as to prevent injury to the health of the inhabitants of the vicinity of said ditch and said river and to promote public health, at a cost of about thirty-five thousand dollars ($35,000.00)."

Be it enacted by the Legislature of the State of Minnesota:

STATE DRAINAGE COMMISSION TO CONSTRUCT OUTLET OF MUSTINKA STATE DITCH IN TRAVERSE COUNTY.—Section 1. The state drainage commission is hereby authorized, empowered and directed to construct, expeditiously as may be found feasible, an outlet of the Mustinka state ditch in Traverse county, Minnesota, of a capacity adequate to receive and carry off all the waters thereof in order that the said waters thereof may be deflected from and prevented from flowing into the Mustinka river in said county, and in order to abate the public nuisance created by the overflow of waters from said Mustinka state ditch and prevent injury to the health of the inhabitants of the vicinity of said ditch and said river and the lands overflowed by the waters thereof, and to promote public health; PROVIDED, however, that if said commission shall find it feasible to deepen and widen the channel

of the said river so as to make it feasible to use the channel of said river as an outlet to said ditch and duly safeguard the lands adjacent to said river against overflows thereof in the future, then the said drainage commission are hereby authorized and empowered so to construct an outlet for the said Mustinka state ditch, the total amount to be expended by the state therefor not to exceed thirty-five thousand dollars.

$35,000 APPROPRIATED.—Sec. 2. The sum of thirty-five thousand dollars, or whatever part thereof may be found necessary to do what is authorized in section 1 hereof to be done is hereby appropriated out of any funds in the state treasury, not otherwise appropriated.

Sixteenth: That following the enactment of the law last aforesaid and during the years 1914 and 1915, the State of Minnesota, in conformity to the provisions of said Act, and a supplemental appropriation for the same purpose made by the General Laws of 1915, constructed and opened a ditch or canal having an average width of sixty (60) feet and an average depth of thirteen (13) feet from the outlet of the said Mustinka State Ditch following the general course of the channel or depression of the Mustinka River to a point at or near the latter's outlet in Lake Traverse, a distance of approximately sixteen (16) miles. That as a result of said construction, in so far as the same followed the general course

of the said Mustinka River, the latter was straightened, widened and deepened, and the new and artificial channel thus created superseded the previously existing natural channel of said river, as the outlet of the waters hereinabove described.

Seventeenth: That the canal or ditch last above mentioned was completed in the spring of 1915. That with the opening of the spring of 1915, said canal or ditch became the receptacle of and outlet for the entire waters of the moraine zone above described and the accumulated waters of the delta and adjacent portions of the prairie zone, embracing an area of approximately seven hundred and fifty square miles, as aforesaid, all whereof were drained or flowed into said canal or ditch and found their way through the same into Lake Traverse. That as a result of such construction, all of the overflow waters, which had previously found a natural outlet through the Rabbit River into the Bois de Sioux River, as hereinbefore alleged, were diverted from that channel and the entire volume of such waters, previously accommodated and disposed of thereby found its outlet and flowed through said canal or ditch.

Eighteenth: That whereas previously to the construction of said canal or ditch, owing to the natural conditions, the drainage and

flow of the waters of said moraine and delta zones through the Mustinka River channel or depression, as hereinabove alleged, were gradual, after the construction thereof a vastly increased volume of water found its outlet therein with greatly accelerated rate of flow, resulting in raising the stage of the waters of Lake Traverse and the Bois de Sioux River approximately five (5) feet above the normal level of high water mark and the consequent inundation and overflow of the entire area of the State of North Dakota hereinabove and in Paragraph Twelfth of this Bill more particularly described.

Nineteenth: That commencing with the opening of the spring of 1915, all of the waters of the moraine and delta zones, as well as those accumulated in the region of the Mustinka State Ditch, as aforesaid, were diverted by said canal or ditch and discharged into Lake Traverse. That not only was the volume of water thus diverted and discharged into said lake largely increased over that naturally and ordinarily finding an outlet therein but also the movement and flow of all the waters in the above described Mustinka watershed was so accelerated by the construction of said canal or ditch that the time consumed in the flowage of said waters from their source to such outlet was materially lessened. That whereas,

prior to the construction and completion of said canal or ditch, such waters required from twelve to twenty days in flowing from said moraine and delta zones to the outlet in Lake Traverse, after such construction, the passage of said waters required relatively few hours between said points.

Twentieth: That owing to the matters last hereinabove alleged, in the spring of 1915, shortly following the seeding and planting of the area of the State of North Dakota hereinabove and in Paragraph Twelfth described, the level of the water in the said Lake Traverse and Bois de Sioux River was raised to such height that all of said lands were inundated and overflowed. That such overflow and inundation was caused solely by the construction of the canal or ditch above described and the consequent rapid and artificial discharge of the waters of the said Mustinka River Watershed by and through the same as aforesaid. That said condition of overflow and inundation owing to the incapacity of the channel of the said Bois de Sioux River to accommodate the excessive volume of waters precipitated therein as aforesaid, has ever since continued, wholly destroying the crops in said area and the use of said overflowed lands for any agricultural purposes whatsoever. That said waters covered said

area to the depth of a foot or more for a considerable period of time, remaining in a condition of stagnancy, thereby producing a menace to the health and comfort of the inhabitants of said area and all others in the immediate vicinity thereof.

Twenty-first: That in the spring of 1916 and solely by reason of the same artificial conditions hereinabove alleged, the entire area within the State of North Dakota was again inundated and overflowed, wholly preventing the planting and seeding of said area and wholly destroying its use for agricultural purposes, and that such condition of inundation and overflow continues at the time of the filing of this Bill.

Twenty-second: That solely by reason of the acts of the State of Minnesota, as aforesaid, the occupants of said area lost the entire crops therein during the year 1915 of a value exceeding One Hundred and Fifty Thousand ($150,000) Dollars; that they have been deprived of the use and benefit of said lands for agricultural purposes during the year 1916 to their loss and damage in a sum exceeding One Hundred Thousand ($100,000) Dollars, that so long as said conditions of trespass are continued, the entire area will be rendered useless and worthless for agricultural or any other purposes whatsoever.

Twenty-third: That as your orator is informed and believes, unless restrained and enjoined in the premises, the defendant, the State of Minnesota, will continue the commission of the acts herein and in this Bill alleged to the great and constantly increasing damage of your orator and its citizens. That the recurrence of such periodic overflowing of the lands herein described is a constant and continuous menace to the health of the citizens of your orator not only those occupying the lands immediately affected by such overflow but those occupying a large area adjacent thereto and in the vicinity thereof.

Twenty-fourth: That the loss and injury to your orator by reason of the acts here complained of is great and irreparable and such as may not be adequately or at all compensated or estimated in money damages. That your orator and its citizens have already suffered loss, by reason of the unlawful acts herein complained of in the damage to the physical properties herein described, exceeding the sum of One Million ($1,000,000) Dollars and such loss and damage will be materially enhanced by the continuation and perpetuation of the conditions here complained of.

Twenty-fifth: That for convenience, your orator has attached hereto a map or plat of the areas of the State of North Dakota and Min-

nesota herein involved, said map being marked Exhibit "A" and hereby referred to and made a part of this Bill. That the general outline of the said Mustinka watershed is marked and indicated on said map in an outline shaded in yellow. That the area of overflow in the region of the delta zone is shown on said map or plat colored blue. That the so-called Mustinka State Ditch and the outlet thereof, is shown on said map colored red. That the area of overflow here involved within the State of North Dakota is indicated on said map and colored yellow.

Twenty-sixth: That your orator has no adequate remedy or relief at or by the rules of common law and can only have such relief by the application of principles of equity.

WHEREFORE, For-as-much as your orator is otherwise remediless at common law and can only have adequate relief through the interposition of equity, your orator prays the judgment of the Court as follows:

First: That the acts herein complained of on the part of the State of Minnesota may be held and adjudged to be unlawful and to constitute an unlawful trespass on the domain of the State of North Dakota.

Second: That the continuation of such acts with the conditions necessarily resulting

therefrom be adjudged to constitute an unlawful nuisance, and as such, that their perpetuation and continuation by the State of Minnesota be perpetually restrained and enjoined.

Third: That the amount of damage sustained by the State of North Dakota and its citizens be ascertained and determined and that a proper judgment and decree therefor against the State of Minnesota be rendered herein.

Fourth: That to the end last aforesaid the Court, by appropriate order, may permit all parties individually interested in any of the matters here in controversy or in the assertion of individual rights growing out of such matters, to be heard and to have their damages assessed, as the Court may direct, that the rights of all may be fully and adequately protected by the final decree to be herein rendered and entered.

Fifth: That a permanent injunction issue against the State of Minnesota enjoining and restraining said last named State permanently from a repetition and continuance of the trespass and other unlawful acts herein and in this Bill alleged.

Sixth: That a permanent injunction issue against the State of Minnesota compelling it

to close and abate the Mustinka State Ditch, and the outlet thereof constructed under legislative authority as above alleged, and to refrain from using said ditch and outlet for draining the waters of the Mustinka River Watershed into Lake Traverse.

Seventh: That a permanent injunction issue against the State of Minnesota, mandatory in character, and requiring said State to restore the Mustinka water course to its natural condition as before said Mustinka State Ditch and outlet were constructed and opened and similarly enjoining the said State of Minnesota from the construction or creation of any artificial conditions resulting or to result in draining a volume of water into the said Lake Traverse or the Bois de Sioux River, exceeding the natural capacity thereof and causing, or to cause, the overflow of any part of the area of the State of North Dakota.

Eighth: For any other or further relief consistent with equity and the case hereby presented.

May it please the Court to grant unto your orator, its Writ or Process of Subpoena to issue out of and under the seal of this Court, thereby compelling the State of Minnesota to be and appear at a time and place to be fixed by said Writ, and then and there to make full,

true and perfect answers to the allegations of the foregoing Bill but not under oath, answer under oath being hereby waived, and to abide by and perform the judgment and decree to be by the Court herein rendered and entered.

And your orator will ever pray.

THE STATE OF NORTH DAKOTA,
Complainant,
BY HENRY J. LINDE,
Attorney General.
FRANCIS J. MURPHY,
A. R. BITZING,
Assistant Attorneys General.

M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Solicitors and of Counsel for Complainant.

Exhibit

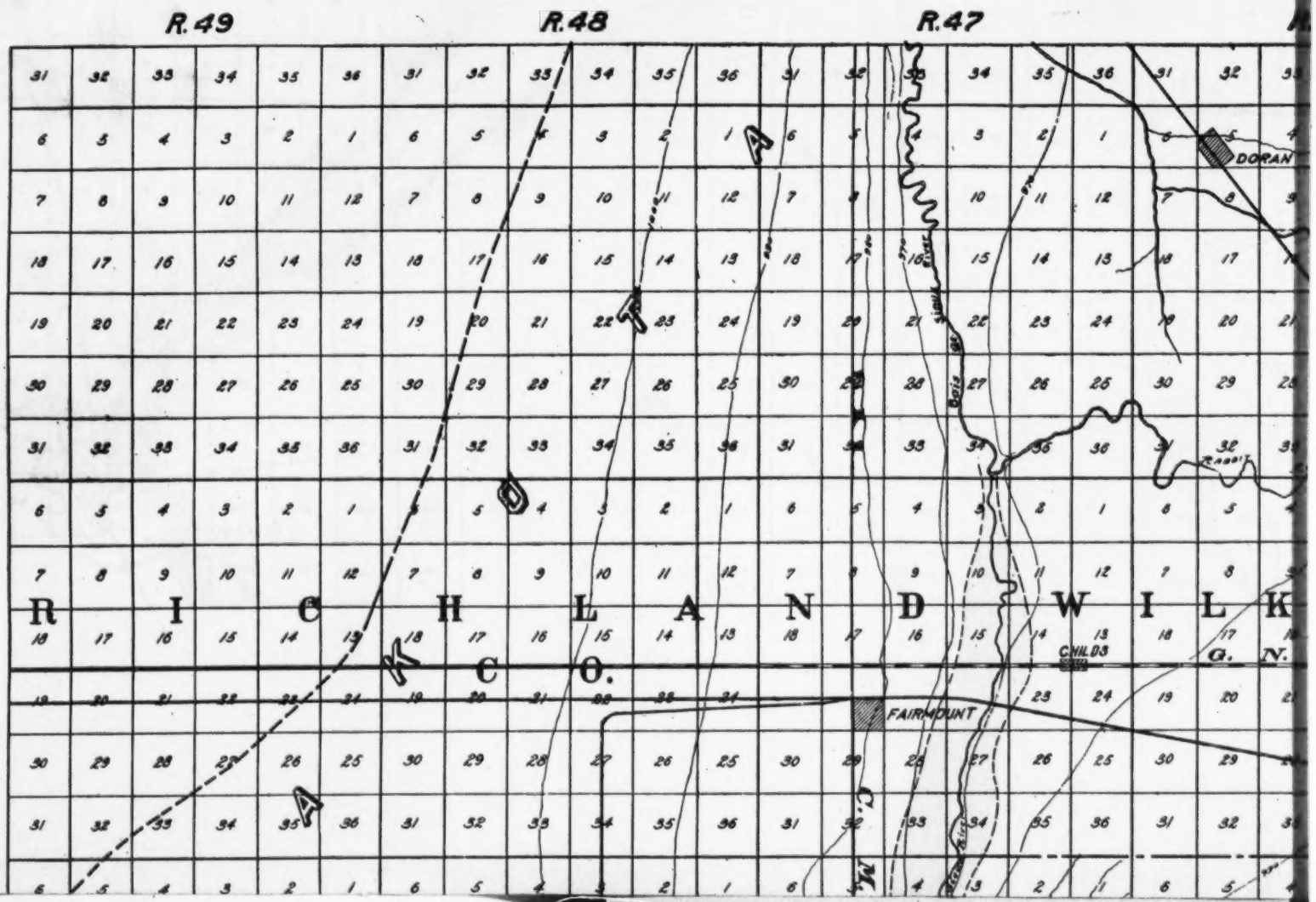
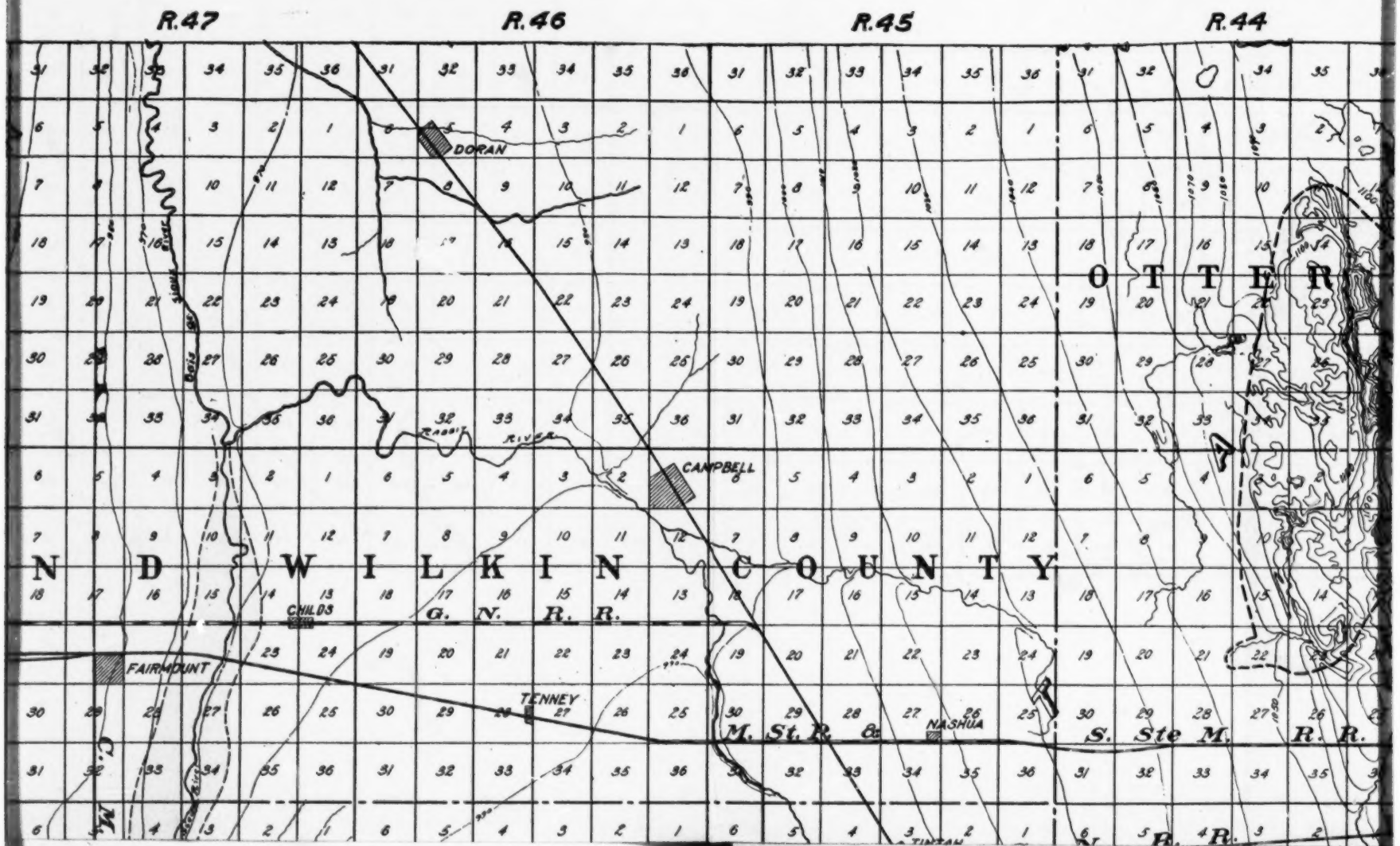
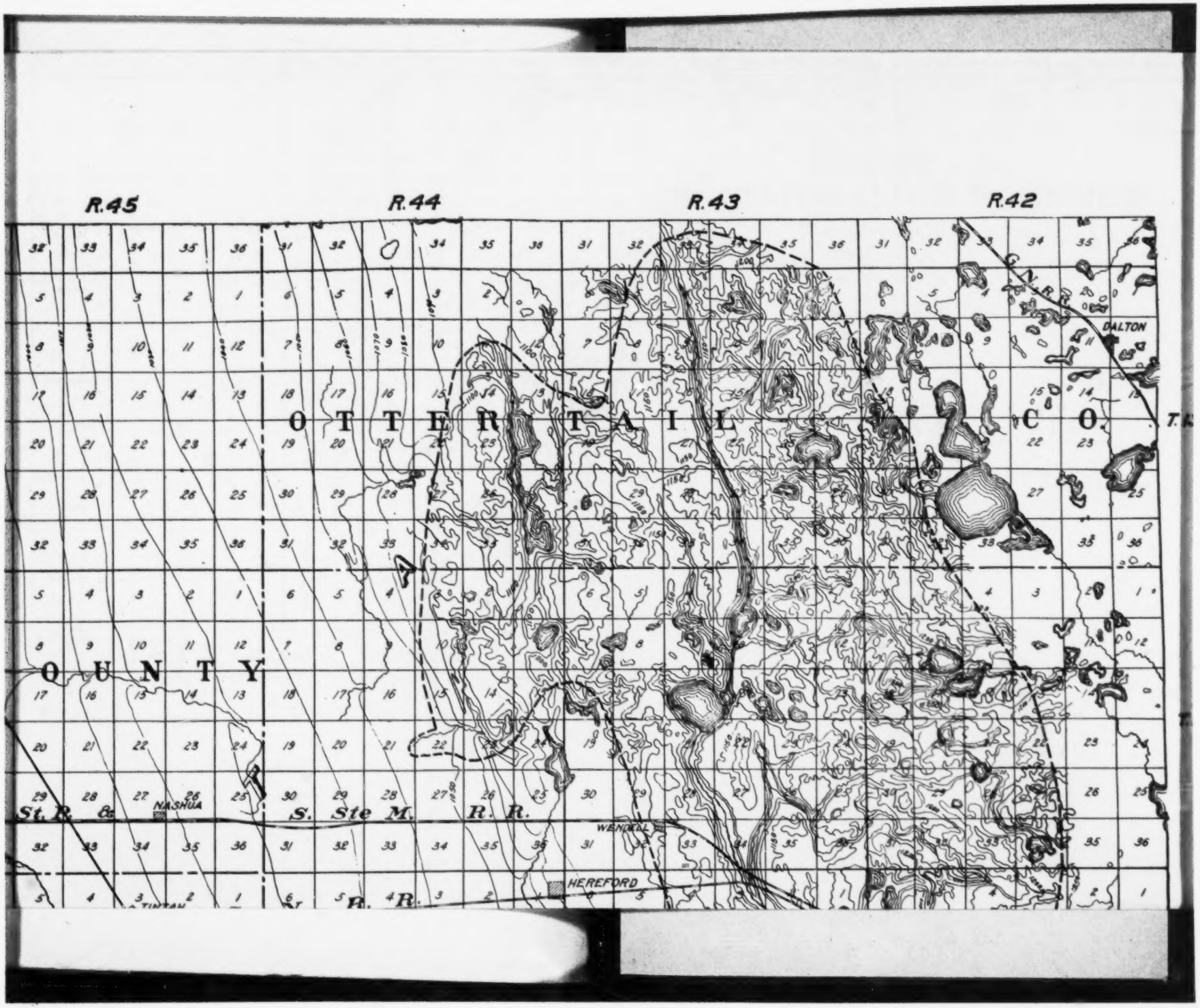

R.49
R.48
R.47
T. 6 S.
RICHLAND
WILKINSON CO.
DORAN
CHILDS
FAIRMOUNT
G. N.
Bois d'Arc
Rabbit
Big Creek

Exhibit A


R.47
R.46
R.45
R.44
DORAN
CAMPBELL
CHILDS
FAIRMOUNT
TENNEY
NASHUA
RABBIT RIVER
G. N. R. R.
M. St. R. & S. Ste M. R. R.
O T T E R
N D W I L K I N C O U N T Y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C O
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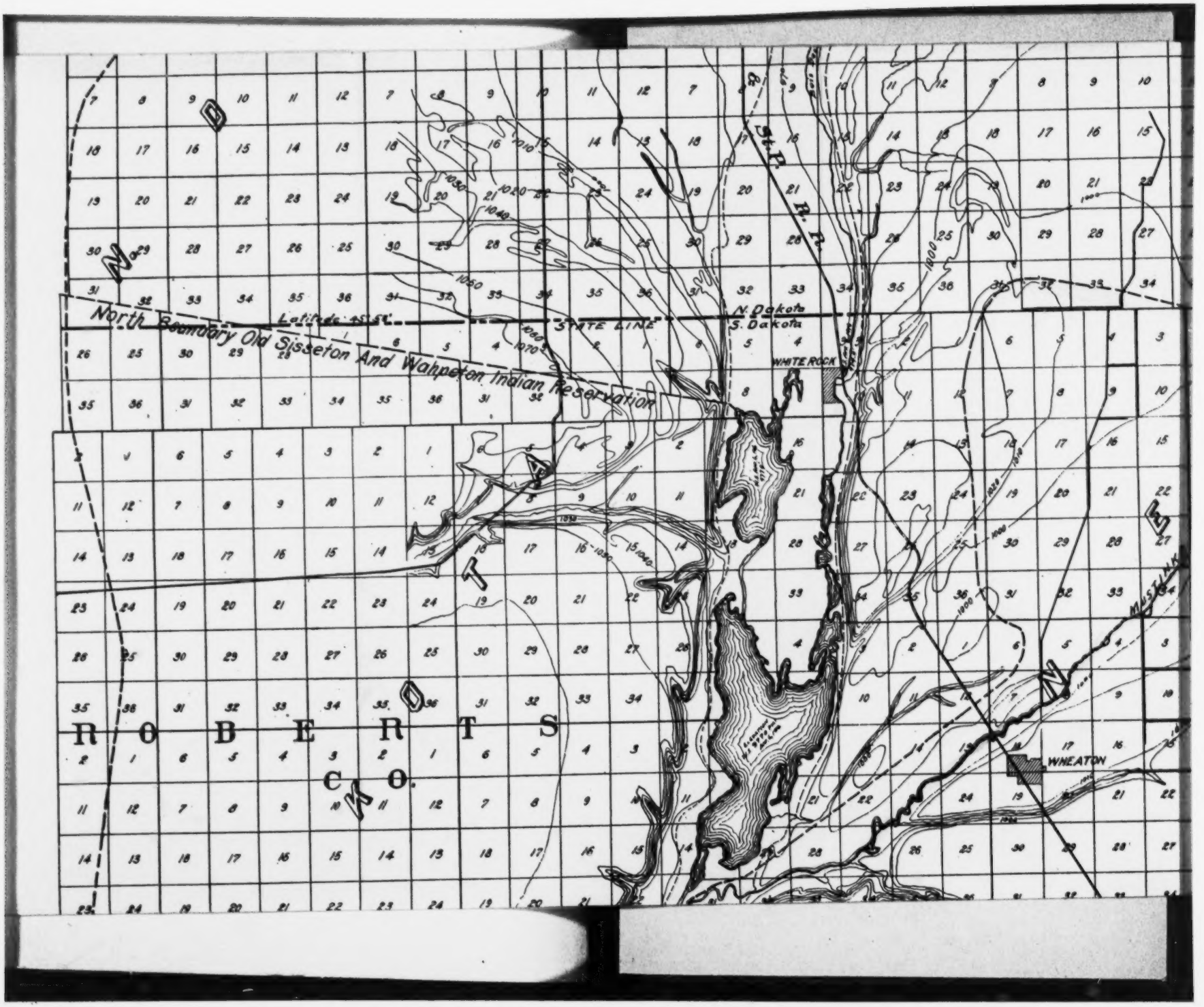
NASHUA
St. P. & S. Ste M. R. R.
WENDELL
HEREFORD


North Boundary Old Sisseton And Wahpeton Indian Reservation
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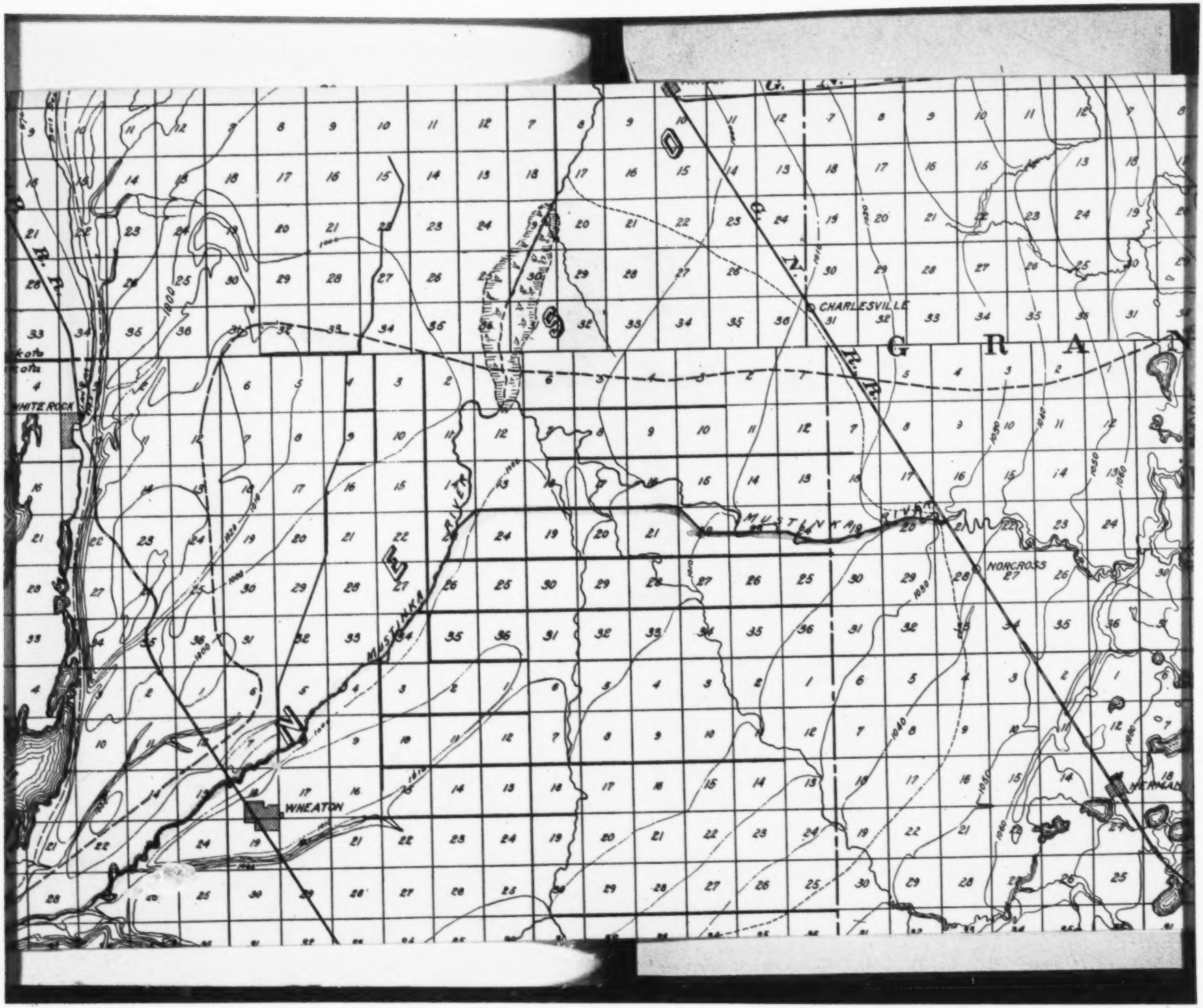
S. Dakota
WHITE ROCK
WHEATON
MUSTINK
R O B E R T S
C O.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R. R.
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G R A N
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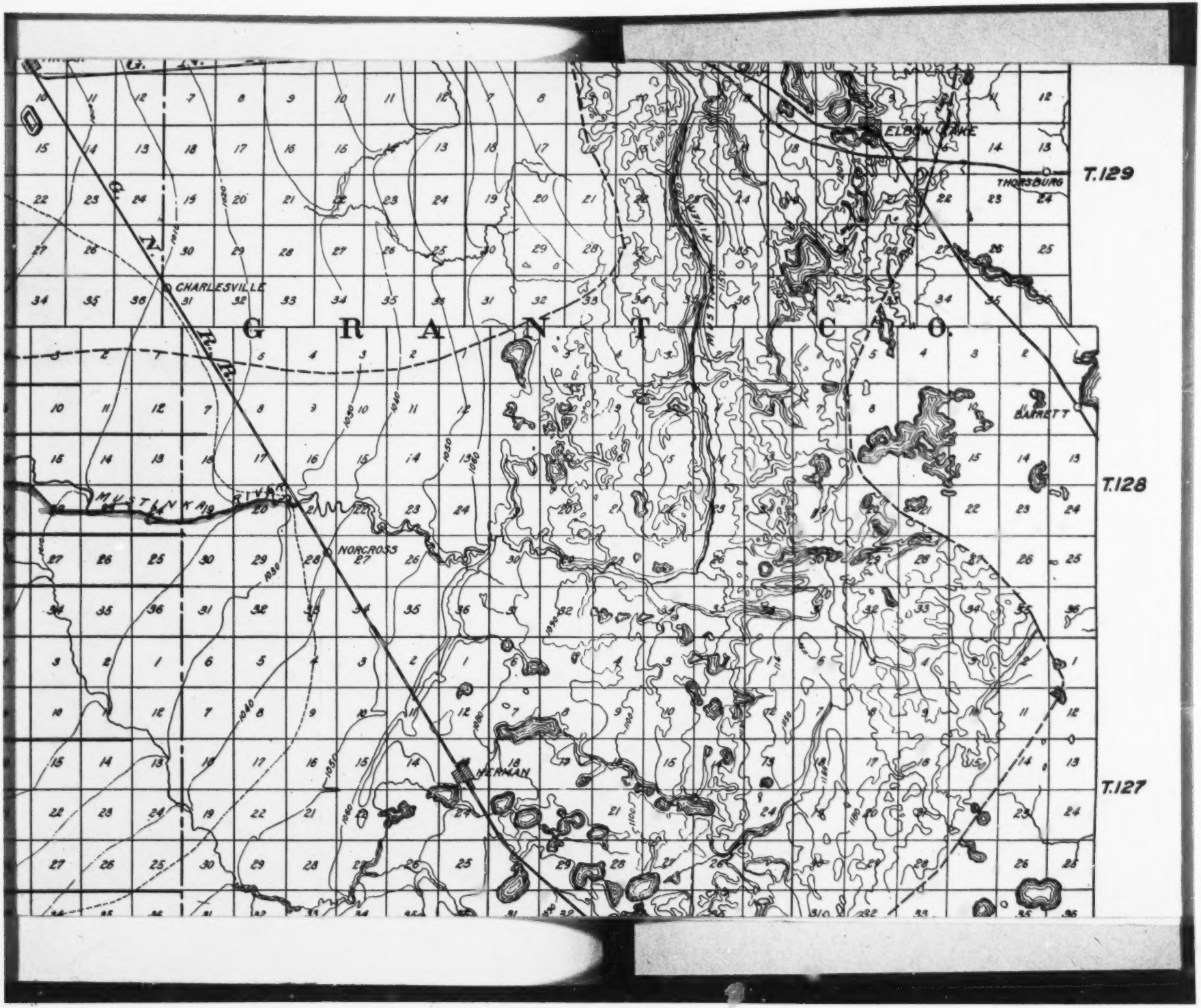
MUSTINKA RIVER
NORCROSS
MUSTINKA RIVER
WHEATON
HERMAN


G. N.
G. N.
R. R.
CHARLESVILLE
ELBOW LAKE
THORSBURG
BARRETT
NORCROSS
HERMAN
MUSTINKA RIVER
GRANT CO.
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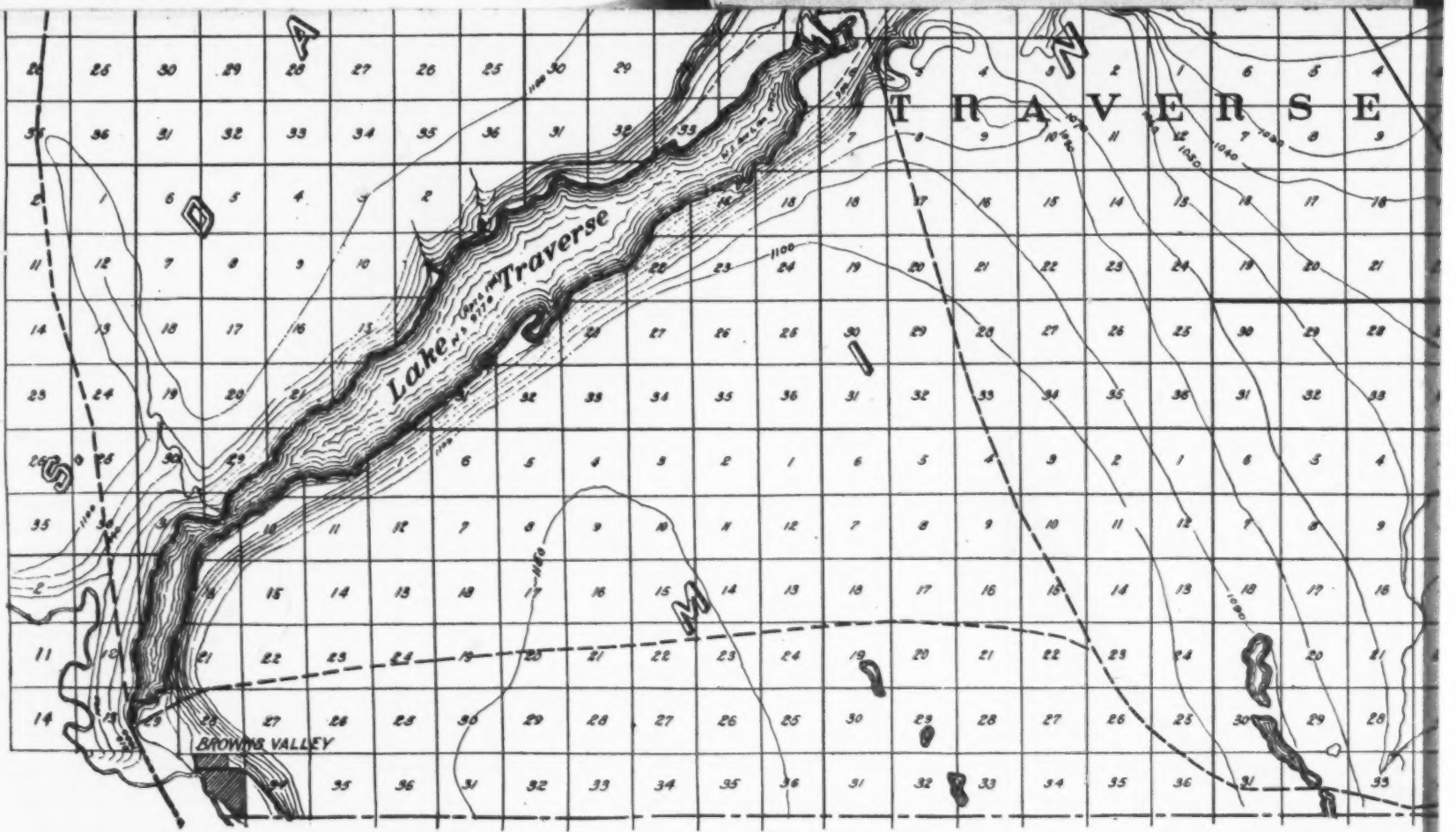
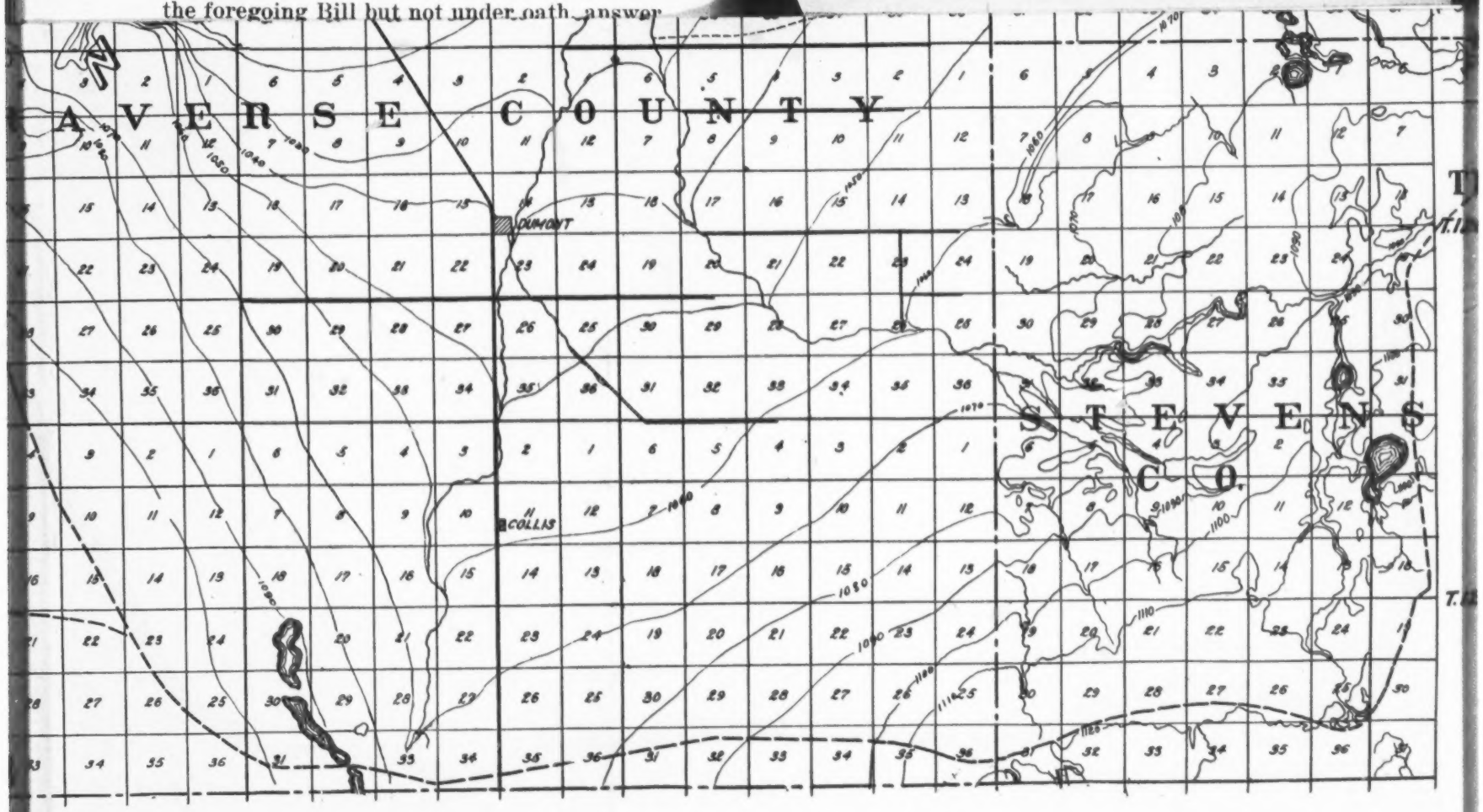
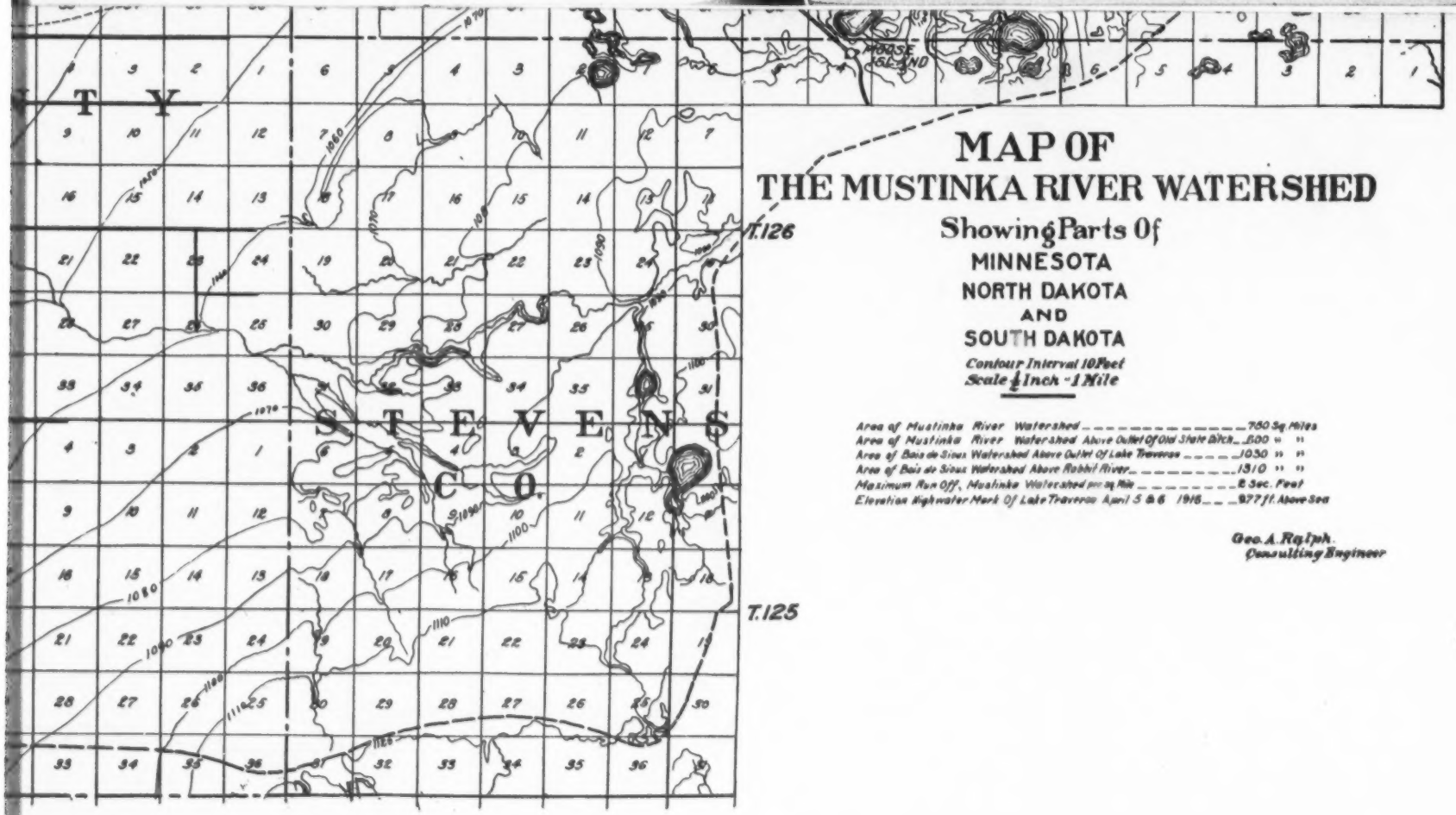
T.128
T.127


Lake Traverse
BROWNS VALLEY
T R A V E R S E

true and perfect answers to the allegations of
the foregoing Bill but not under oath answer





MAP OF
THE MUSTINKA RIVER WATERSHED

Showing Parts Of

MINNESOTA

NORTH DAKOTA

AND

SOUTH DAKOTA

Contour Interval 10 Feet

Scale 1/2 Inch = 1 Mile

Area of Mustinka River Watershed	750 Sq. Miles
Area of Mustinka River Watershed Above Outlet Of Old State Ditch	500 " "
Area of Bois de Sioux Watershed Above Outlet Of Lake Traverse	1030 " "
Area of Bois de Sioux Watershed Above Rabbit River	1310 " "
Maximum Run Off, Mustinka Watershed per sq. Mile	6 Sec. Feet
Elevation Highwater Mark Of Lake Traverse April 5 & 6 1916	977 ft. Above Sea

Geo. A. Ralph.
Consulting Engineer

Office Supreme Court, U. S.
FILED
DEC 29 1920
JAMES D. MAHER,
CLERK.

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1920 1921

NO. ORIGINAL.

10

THE STATE OF NORTH DAKOTA,

Complainant,

vs.

THE STATE OF MINNESOTA,

BRIFF AND ARGUMENT ON BEHALF OF THE STATE OF MINNESOTA.

CLIFFORD L. HILTON,
Attorney General,
MONTREVILLE J. BROWN and
EGBERT S. OAKLEY,
Assistant Attorneys General
For Minnesota.

JOHN E. PALMER,
Of Counsel.

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SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1920.

No. 14 ORIGINAL.

THE STATE OF NORTH DAKOTA,

Complainant,

vs.

THE STATE OF MINNESOTA,

BRIFF AND ARGUMENT ON BEHALF OF THE STATE OF MINNESOTA.

In this action complainant, the State of North Dakota, seeks to recover damages for injuries to the crops and lands of its land owners sustained during the years 1915 and 1916 on account of floods alleged to have been caused by an artificial system of drainage created and put into existence by the state of Minnesota, and to restrain the state of Minnesota from the further maintenance of the

same and require it to restore to its natural condition the Mustinka river, a portion of the channel of which is being made use of by the state of Minnesota for and on behalf of the aforesaid drainage system.

It is apparent two main questions are presented:

A. The right of North Dakota to recover damages in an action at law.

B. The right of North Dakota to equitable relief by injunction.

These questions will be taken up in their order.

A.

This court is without jurisdiction to entertain this action so far as it is one to recover damages.

For convenience hereinafter the state of Minnesota may be referred to as the defendant, and in quoting from the record figures in parentheses will refer respectively to the volume and page of the printed record.

The complainant cites the cases of Georgia v. Tennessee Copper Co., 206 U. S. 230; Kansas v. Colorado, 185 U. S. 125; Missouri v. Illinois & Chicago District, 180 U. S. 208, and relies on the rule of law announced therein to sustain its position that it has proceeded properly in invoking the original jurisdiction of this court. The rule laid down

by the court in these cases is that it has original jurisdiction of an action brought by a state in its quasi-sovereign capacity against another state to restrain it from an act which threatens the health, comfort and property interests of its citizens or a substantial number thereof. In none of these cases, however, did the plaintiff state seek to recover damages for such of its citizens as may have suffered loss by reason of the alleged wrongful act of defendant state. In each the relief sought was purely equitable, namely, an injunction restraining the defendant state from continuing the act complained of.

In this action complainant seeks not only equitable relief in the form of a permanent mandatory injunction, but also legal relief in the form of damages. Damages are sought not only for itself, but for a number of its land owners alleged to have been injured in their property.

In its bill of complaint complainant alleges that the owners of land in the flooded area suffered great financial loss by reason of the construction of the Mustinka ditch, and in the prayer for relief asks "that the amount of damages sustained by the state of North Dakota and its citizens be ascertained and determined and that a proper judgment and decree therefor against the state of Minnesota be rendered; and that to the end last aforesaid the court by appropriate order may permit all parties individually interested in any of the matters herein in controversy or in the assertion of individual

rights growing out of such matters to be heard and to have their damages assessed as the court may direct that the rights of all may be fully and adequately protected by the final decree to be herein rendered and entered." (I, 14-15) That complainant, in the proceedings had before the commission appointed to take the testimony, proceeded on the theory that it is entitled to damages in such amount as was sustained by the owners of lands flooded, is clearly evidenced by the fact that the testimony of those land owners is made use of by complainant in its brief as a basis for the recovery of damages in the case. The matter of damages is dicsussed in its brief under the heading "Consideration of Damages Established by the Evidence." (Complainant's brief, p. 138) Under this general heading crop loss, loss of improvements, expense of restoring the land, rental value, impairment of value, and public damage are discussed. These matters, save the last, all have reference to damages claimed to have been sustained by land owners, and following the consideration thereof complainant sets forth a table setting forth the loss claimed to have been sustained by each land owner and tenant, there being 26 land owners and 4 tenants enumerated. (Complainant's brief, p. 140) In addition complainant devotes several pages of its brief to a discussion of rules of law relative to the measure of damages which should be applied in determining the damages which should be awarded against defendant to cover the loss sustained by its land owners and tenants. This

action was therefore instituted, tried and is being argued on the theory that complainant can invoke the original jurisdiction of this court in an action brought by it against the state of Minnesota to recover damages for those of its citizens who sustained loss by reason of injuries to their property occasioned by the alleged wrongful act of the state of Minnesota.

The only evidence as to public damage is that relative to certain town roads, bridges and culverts, and is found in the testimony of Charles R. Pinkney (IV, 1807-1809). Upon examination of this evidence it is readily seen that such is not of sufficient probative force to even conjecture as to the amount of such damage, so that so far as damages are concerned the only damages which can be awarded in this action under any circumstances are for individual land owners of North Dakota.

Defendant contends that this court is without jurisdiction to entertain an action brought by one state against another state wherein it is sought to recover damages for injuries to property of citizens of plaintiff state sustained by reason of an unlawful act of defendant state. If this contention is sound then this action in so far as it is one to recover damages must fall.

This was the position taken by defendant at the start. In its answer, paragraph II, (I, 19) it alleges "that the complainant herein has no interest as a state in the relief or any part of the relief demanded by the bill herein, in this that all of the

damages done or likely to be done, if any have been done, or may hereafter be done, of the nature of those alleged in the bill have been done or will be done to residents of the state, and complainant is not the real party in interest but only individual citizens and municipalities of that state and persons resident therein, and these wholly as to their individual property, and defendant therefore pleads in bar to this action and all of it that such general governmental interest of the state of North Dakota in its citizens is not such that complainant may bring against the state of Minnesota an action to recover damages for injury to or to prevent such future injury of like kind to the property of its individual citizens." Again, prior to the introduction of evidence by complainant, defendant took this position. It objected to the reception of any evidence under the bill of complaint, for the reason among others: "First, that it appears on the face of said bill of complaint that the matters set forth therein do not constitute a controversy between the state of North Dakota and the state of Minnesota justiciable in this court under the constitution; second, that it appears on the face of said bill of complaint that no property rights of the state of North Dakota are affected by the matters alleged; and that the controversy, if any exists, is between private land owners and the state of Minnesota and that the state of North Dakota is in fact only lending its name to said individuals for the redress of alleged private wrongs and injuries." (1,

44) The same reasons were urged by defendant in opposition to the motion by complainant for an order to open, print and file the record and for a division of the cost of printing. (See brief of state of Minnesota in opposition to the aforesaid motion on file in this case.)

That the contention of defendant is sustained by the decisions of this court is readily observed upon an examination thereof.

Prior to the adoption of the eleventh amendment to the constitution the judicial power of the supreme court extended to a suit brought against a state by a citizen of another state. It was so held in the case of Chisholm v. Georgia, 2 Dal. 419. This decision led to the adoption of the eleventh amendment. This amendment withdrew from the judicial power of the United States every suit in law or equity commenced or prosecuted against one of the United States by a citizen of another state, and prohibits the supreme court from exercising jurisdiction of a cause in which one state seeks relief against another state on behalf of its citizens in a matter in which the state prosecuting has no interest of its own. To sustain this proposition we cite the cases of New Hampshire v. Louisiana; New York v. Louisiana, 108 U. S. 76, and Louisiana v. Texas, 176 U. S. 1.

In the cases of New Hampshire v. Louisiana; New York v. Louisiana, the states of New Hampshire and New York started original actions in the supreme court against the state of Louisiana to re-

cover on certain of the bonds of the state of Louisiana, the bonds being owned by the citizens of the states of New Hampshire and New York. The court, speaking through Mr. Chief Justice Waite, held that it had no jurisdiction and dismissed the bill of complaint in each case on the ground that a state is precluded by the eleventh amendment from invoking the jurisdiction of the supreme court in an action to recover on claims of its citizens against another state. In these cases the court in its opinion reviewed the history of the eleventh amendment and said:

> "Other states also took active measures in the same direction, and, soon after the next congress came together, the eleventh amendment to the constitution was proposed, and afterwards ratified by the requisite number of states, so as to go into effect on the 8th of January, 1798. That amendment is as follows:
>
> 'The judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by citizens of another state, or by citizens and subjects of any foreign state.'
>
> Under the operation of this amendment the actual owners of the bonds and coupons held by New Hampshire and New York are precluded from prosecuting these suits in their own names. The real question, therefore, is whether they can sue in the name of their respective states, after getting the consent of the state, or, to put it in another way, whether a state can allow the use of its name in such a suit for the benefit of one of its citizens.

> The language of the amendment is, in effect, that the judicial power of the United States shall not extend to any suit commenced or prosecuted *by* citizens of one state against another state. No one can look at the pleadings and testimony in these cases without being satisfied, beyond all doubt, that they were in legal effect commenced, and are now prosecuted, solely by the owners of the bonds and coupons.
> * * *
>
> The evident purpose of the amendment, so promptly proposed and finally adopted, was to prohibit all suits against a state by or for citizens of other states, or aliens, without the consent of the state to be sued, and, in our opinion, one state cannot create a controversy with another state, without the meaning of that term as used in the judicial clauses of the constitution, by assuming the prosecution of debts owning by the other state to its citizens. Such being the case we are satisfied that we are prohibited, both by the letter and the spirit of the constitution, from entertaining these suits, and *the bill in each case is dismissed.*"

The rule of law laid down in these cases is applicable to the case before us, in so far as the recovery of damages is concerned. The action was started, tried and is being argued, as heretofore stated, on the theory that this court can award damages to cover the loss sustained by individual land owners. So far as damages are concerned, it is a suit by these land owners. The state is simply lending the use of its name to them. The land owners in fact started the action, donated funds to

carry it on, with the understanding that they were to recover damages for the loss claimed to have been sustained by them. And this court is asked to provide in its final decree for the adjustment of the amounts of their claims so that they may be protected in the matter of obtaining adequate relief in the form of damages, in case complainant is successful in the suit.

To substantiate what we have said relative to the institution of this action by private land owners, we submit that the record shows beyond dispute the institution of this litigation by private land owners and for their own individual benefit; that these land owners contributed to a fund of approximately $4,000 with which to employ counsel and institute this litigation, upon the understanding that the state of North Dakota would appropriate from any damages recovered from the state of Minnesota to such land owners the amount of their individual damage alleged to have been sustained by the flooding of lands in the Bois de Sioux valley. We quote from the record:

Peter G. Smith—(I, 61-62)

"Q. Have you any interest in the result of this suit?

A. Yes, sir, I have.

Q. What interest have you, please?

* * *

A. I have a claim for $1500 damage to crops.

Q. And it is your understanding that if

damages are recovered in this case you will receive part of the damages recovered?

* * *

A. Well, I expect to get something out of it if we win the case.

Q. That is, you expect to get all or a part of your $1500 if a recovery is had in this case by the state of North Dakota?

A. Yes, sir.

Q. Have you contributed any funds for the purpose of carrying on this case on the part of the complainant?

* * *

A. Yes, sir, I have.

Charles R. Pinkney—(I, 98)

Q. Do you expect, if damages are recovered by the state of North Dakota, that you will receive compensation for the damages you have suffered?

A. Yes, sir.

Q. And have you not contributed to the fund to defray the expense of conducting this case on the part of the complainant?

A. Yes, sir.

See further testimony of this witness (III, 1319).

Q. Upon this basis of rental value you have made an estimate of your damages here—$11,845.00. * * * Have you given these statements of your damages for the purpose and with the expectation of recovering the same?

A. Yes.

Q. From whom do you expect to recover those damages?

A. Eventually, I suppose, from the state of North Dakota. The state of Minnesota will reimburse the state of North Dakota and the state of North Dakota will reimburse us. That is the way I understand it.

Charles L. Baker—(III, 1614)

Q. This damage that you have stated, Mr. Baker, you have given here with the expectation that you will recover it, have you not?

A. Yes, sir.

Q. Have you contributed toward the expense of instituting and carrying on this suit against the state of Minnesota by the state of North Dakota?

A. Yes, sir.

Q. And that has been with the understanding and expectation that if damages are recovered by the state of North Dakota that you will get your damages from the state of North Dakota?

A. From the state of North Dakota? I am supposed to get my damages out of the—

Q. Suit?

A. Yes, sir.

Q. And that is why you contributed this money?

A. Sure.

Herman G. Miller—(IV, 1770)

Q. In making the statement of your damages here have you made such statement with the expectation of recovering those damages?

A. Certainly.

Q. From whom?

A. From the state of Minnesota, or who-

ever is responsible for this, which I understand is the state of Minnesota. They are the ones that are the owners of this ditch that caused this trouble and consequently they are the ones to pay it.

Q. And you understand that you are in practical effect a party to this action against the state of Minnesota?

A. I understand so.

Q. And you have contributed money toward the expense of instituting and maintaining this suit by the state of North Dakota against the state of Minnesota?

A. Yes, sir.

Q. With the understanding that you are to have your damages from North Dakota, if North Dakota recovers from Minnesota?

A. Yes, sir.

B. W. Schoureiler—(III, 1287-1288)

Q. You state that no part of this damage—$2408.25—has been paid to you?

A. No, sir.

Q. Have you any reason to think it will be paid to you?

A. Yes, sir.

Q. What reason?

A. Well, I think those people that flooded us ought to be made to pay the damage.

Q. Do you?

A. Yes, sir.

Q. And that is what you expect?

A. Certainly.

Q. Whom do you mean when you say the people who flooded you?

A. Well, I mean the state of Minnesota.

Q. Your idea is that the state of Minnesota

flooded you and that it should pay this $2408.25 to you?

A. To me or my attorney.

Q. Did you expect that to be recovered in this litigation?

A. Yes, sir.

Q. Who are your attorneys?

A. Mr. Pinkney and the deputy attorney general.

Q. Of North Dakota?

A. Yes, and Lind and Boutelle.

Q. Then the attorneys for the complainant, the state of North Dakota, represent you in this litigation, Mr. Schouweiler?

A. That is the way I look at it.

Q. That is your understanding of the matter?

A. Yes, sir.

Q. And you have contributed, have you not, a sum of money to the expense of carrying on this litigation on the part of the complainant, the state of North Dakota?

A. Yes, sir.

Q. And you have done so with the expectation and understanding that if damages are recovered by the state of North Dakota you will be compensated for the damage that you have suffered?

A. Yes, sir.

See also the testimony of this witness on page 1298.

Q. You stated upon your direct examination that a number of the land owners injured by these floods had contributed to a fund to employ private counsel to represent them in this litigation. How much of a fund has been contributed by these private parties?

A. I am unable to say just how much money there was raised.

Q. Have you some information respecting that?

A. Approximately, I think, something like $4,000."

Other witnesses testify to identically the same effect. Theodore Brackin (I, 241-242); Wallace J. Taylor, (I, 272); J. H. Bolton (I, 299); Newell N. Powell (III, 1379); Earl Burgess (III, 1435); Andrew Rydell (III, 1448); Joseph A. Sauter (III, 1485); Joseph W. Gajer (III, 1529); Albert L. Waddington (III, 1580); Fritz Quidding (III, 1589); Mary A. Clarey (III, 1631); John F. Broderick (III, 1675); H. W. Briden (III, 1687); Burt Kurtz (III, 1744); James A. Westerman (IV, 1870); John C. Hurdlebrink (III, 1550).

The rule of law announced in the cases of New Hampshire v. Louisiana; New York v. Louisiana, was applied in the case of Louisiana v. Texas, supra. In the opinion in that case the court, speaking through Mr. Chief Justice Fuller, said:

"On the 8th of January, 1798, the eleventh amendment was ratified, as follows: 'The judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by citizens of another state, or by citizens or subjects of any foreign state.'

Referring to this amendment, Mr. Chief Justice Waite, in New Hampshire v. Louisiana and New York v. Louisiana, 108 U. S. 76, 91,

said: 'The evident purpose of the amendment, so promptly proposed and finally adopted, was to prohibit all suits against a state by or for citizens of other states, or aliens, without the consent of the state to be sued, and in our opinion, one state cannot create a controversy with another state within the meaning of that term as used in the judicial clauses of the constitution by assuming the prosecution of debts owing by other states to its citizens.'

In order then to maintain jurisdiction of this bill of complaint as against the state of Texas, it must appear that the controversy to be determined is a controversy arising directly between the state of Louisiana and the state of Texas, and not a controversy in the vindication of grievances of particular individuals."

See also Oklahoma v. Atchison, etc., R. Co., 220 U. S. 277; Oklahoma v. Gulf, etc., R. Co., 220 U. S. 290; Kansas v. United States, 204 U. S. 331; Missouri v. Illinois & Chicago District, 180 U. S. 208; Wisconsin v. Pelican Insurance Co., 127 U. S. 265.

The rule is therefore well established that a state cannot invoke the original jurisdiction of this court in an action against another state to recover damages sustained by its citizens by reason of an unlawful act of such other state. This rule was in no way modified by the cases of Georgia v. Tennessee Copper Company, Missouri v. Illinois & Chicago District, and Kansas v. Colorado, supra, relied on by complainant. These cases lay down the rule that this court will take jurisdiction of

an action brought by a state against another state where an act of that state has affected or will affect the health, comfort and property interests of its citizens or a substantial number thereof. It takes jurisdiction by reason of the fact that the state brings the action in its quasi-sovereign capacity. It has an interest as such in its air, lands and waters, and it is for it to say whether its air shall be pure, its waters polluted and its lands inundated with water. If another state threatens to render its air impure, pollute its waters or flood its lands, it may invoke the original jurisdiction of this court and restrain the act of such other state. It may do this even though it has no financial interest in the matter. It may do so by reason of its quasi-sovereign capacity. But unless it is interested in its proprietary capacity it cannot invoke the original jurisdiction of the court to recover damages. The suit, if prosecuted successfully, may be of great benefit to individual land owners, but damages for them cannot be obtained. They are interested in the matter in a proprietary capacity, but the state is not and the state cannot be made use of by them or permit itself to be used by them in an attempt to obtain damages. This is prohibited by the eleventh amendment to the constitution as construed by the decisions of this court.

B.

NORTH DAKOTA NOT ENTITLED TO EQUITABLE RELIEF.

First consideration will be given to the facts. It is submitted that the following contentions with reference to the facts are abundantly sustained by the evidence, and they will be discussed in our brief, so far as practicable, in the same general order, under appropriate heads and subheads.

1. The Lake Traverse and Bois de Sioux watershed includes lands in North Dakota, South Dakota and Minnesota, which lands were once the bed of a prehistoric lake later known as the river Warren; these lands slope slightly to the north and include 473 square miles in South and North Dakota and 969 square miles in Minnesota.

2. A large amount of artificial drainage, mostly private, but some public, has been constructed upon the Dakota drainage area and into Lake Traverse and the Bois de Sioux river. If there is anything to the contention that artificial drainage caused or contributed to the high stage of water and consequent overflow of Lake Traverse in 1915 and 1916, it is impossible to measure or apportion the quantum coming into said lake and river from the respective states or to ascertain the amount which each may have contributed to the floods here complained of.

3. The location and general topographical situation of the lands in North Dakota alleged to have been flooded is such that they are inevitably subject to flooding and overflow by the waters of Lake Traverse. These lands lie wholly in the Bois de Sioux valley or canyon and are, and always have been, of a swampy and marshy character, overflowed in wet seasons, of no value except in dry years and cultivated only in such years and then only in part. All these lands are at the same mesne level as the waters of Lake Traverse with no adequate fall or outlet for surface waters. They are naturally and essentially a part of the bed of the lake, reclaimed in dry seasons and flooded in wet seasons. Such constantly recurring overflows have, it is true, given the lands a deposit of alluvial matter so that in very dry seasons when susceptible of cultivation at all they are fertile and productive. The Bois de Sioux river, the only natural outlet, having almost no fall through said flooded area, is wholly inadequate as an outlet of Lake Traverse. This river is the beginning of the Red River of the North, which flows to the north, the southern portion of its drainage area breaking up in the spring before the northerly outlet is open. There is, moreover, at the northerly end of said alleged flooded area a strong, heavy, rapid stream called the Rabbit river, emptying into the Bois de Sioux at right angles, and in times of excessive rainfall said Rabbit river so overcomes the sluggish flow of the Bois de Sioux to the north that

the water is set back upon the area in question. In other words, the bottling effect of the Rabbit river accounts in large measure for the overflow of such of these overflowed lands adjacent to the Bois de Sioux as are not properly a part of the bed of Lake Traverse. A detailed discussion of the evidence as to the individual tracts of land in North Dakota alleged to have been flooded in 1915 and 1916 will more fully establish and confirm the general situation. It will demonstrate that such lands have never been of substantial value for agricultural or any other purposes; that they have always been and are what is commonly called trading stock; that they were no more injured in the years in question than in previous years.

4. On the Minnesota side of Lake Traverse and the Bois de Sioux river there is nearly twice the area of land as in the Dakotas draining naturally into said lake and river, but only one-half of the total drainage comes through the Mustinka river. The Mustinka river watershed, upon which the artificial drainage complained of has been constructed, comprises in fact only one-half of the drainage area into said lake and river. The other one-sixth in Minnesota is wholly unaffected by the artificial construction complained of. It is impossible to measure or apportion the quantum of water contributed on the Minnesota side by the Mustinka drainage area and the drainage area in Minnesota lying outside thereof. Of the Mustinka river drainage area only 29 per cent comes in from the

west and is comprised within the so-called moraine zone mentioned in complainant's bill. Said 29 per cent is the only drainage that is or could be substantially affected by the Mustinka state ditch. Sixteen and two-thirds per cent of the Mustinka drainage area comes in from the southwest through Five Mile creek. Fifty-four per cent comes in from the south through Twelve Mile creek. The drainage from Five File and Twelve Mile creeks has a very strong flow to the north and northwest and all overflow therefrom passes on over into the Rabbit river exactly as in a state of nature. No water is diverted from the Rabbit river by the artificial drainage complained of. The same flooding of lands as under natural conditions has been experienced in the Mustinka river drainage area since said artificial construction.

5. The first section of the Mustinka state ditch was constructed in 1894, 1895 and 1896, under chapter 221, Laws Minnesota 1893, and chapter 164, Laws Minnesota 1895, for the sole purpose of draining swamp lands owned by the state of Minnesota situate in Grant county therein. These lands had been granted to Minnesota for drainage and reclamation under the act of Congress of September 28, 1850, as extended to the state of Minnesota by act of March 12, 1860. The sole purpose of the first construction of the Mustinka state ditch (as recited in chapter 138, Laws 1911, set forth in complainant's bill) was to drain said state owned swamp lands in Grant county and

make them fertile, valuable and salable, and for no other purpose. The sole purpose of the last construction of the Mustinka state ditch (under chapter 138, Laws 1911) was to provide an outlet for the drainage of said state swamp lands and carry the water therefrom on into Lake Traverse. It was believed that some of the farm lands lying west and south of the outlet of said first construction were flooded thereby, and the avowed and only purpose of the last construction was to provide an outlet for said waters and carry them into Lake Traverse.

6. The theory of complainant as disclosed by the bill of complaint and supported by the testimony of the witness Ralph, to the effect that the construction of the Mustinka state ditch diverted the flow of waters from the Rabbit river to the Mustinka river and into Lake Traverse, thereby causing the floods complained of, is not supported by the evidence. The evidence discloses that no diversion of waters took place as claimed by the complainant.

The later theory of complainant supported by the testimony of Dean Shenehon and Professor Chandler, to the effect that the Minnesota drainage so accelerated the flow into the Mustinka river and Lake Traverse as to result in raising the mesne elevation of Lake Traverse and thereby cause the floods complained of, is not supported by the evidence. The rise in the elevation of Lake Traverse due to the aforesaid drainage, if any, was insig-

nificant in extent and did not cause the floods complained of or contribute to any substantial degree in causing the same.

7. The real cause of the floods in the Bois de Sioux valley in 1915 and 1916 was excessive precipitation, the rainfall in the area draining into Lake Traverse and the Bois de Sioux river in said years exceeding both in volume and duration anything theretofore known upon said area. A succession of excessively wet years, to-wit: 1914, 1915 and 1916, accounts for a general flooded condition of the entire area draining into said lake and river. The flooded condition and loss of crops was general over said entire area and the flooding of lands in the Bois de Sioux valley would have taken place exactly as it did irrespective of any ditch construction in Minnesota.

1. LAKE TRAVERSE AND BOIS DE SIOUX WATERSHED.

History and Extent—The general situation, topographically and geologically, of the alleged flooded lands (called the Bois de Sioux valley) is such that they are naturally and inevitably subject to overflow. The record shows that substantially the same area flooded in 1915 and 1916 was flooded to the same or a greater extent in the year 1881, to nearly as great an extent in 1880, 1882, 1883, again in 1887 and 1888, again in 1897, (IV, 1944-52, 1979, 1982, 1985, 1992) and again in 1906, 1907 and 1908.

(I, 69-70; IV, 2031; III, 1556) In times of high water the waters of Lake Traverse always spread to the northward and overflow these lands. The mesne elevation of water in Lake Traverse at ordinary stages is about 974 feet above sea level. (I, 305) The lands in question are at the same or lower average elevation and it will be observed that the total fall for the first nine miles north of White Rock and extending easterly and westerly about 2½ miles, which area takes in the major portion of the lands flooded, is 2.6 feet, or less than .3 of a foot to the mile. (II, 781) From the map attached to the complainant's bill as exhibit A, (complainant's exhibit 1) it will be observed that the entire area shaded yellow, and alleged to have been overflowed, lies between the permanent water surface of Lake Traverse on the south and the Rabbit river on the north. See also defendant's exhibit 28, (IV, 2175). This entire area is described by Professor Bass, defendant's expert engineer, and Professor Sardeson, defendant's expert geologist, as practically a canyon, and in truth a part of the bed of Lake Traverse. Professor Sardeson gives a valuable and interesting statement of the formation of this canyon geologically and of the glacial Lake Aggasiz, the action of which created what is known as the Red River valley. As the glacier melted and retreated northward a glacial lake was formed, extending from the moraine zone, so-called, in Minnesota to the corresponding moraine to the westward in Dakota.

This glacial lake in prehistoric times extended as far north as Hudson Bay and its floor is what forms the Red River valley, the various beaches formed as the lake fell being clearly marked. The southern extremity of this lake (the southerly beaches) were across the very area involved in this suit. As the lake went down its outlet to the south was at first the entire canyon from the Rabbit river to the southerly extremity of Big Stone lake, and the waters continued south forming the Minnesota river which had its outlet into the Mississippi. This vast canyon, through which the waters of the glacial lake flowed, was the bed of the glacial river Warren. About the middle of this river another stream, now called the Little Minnesota, came in from the west and very gradually built a delta across the glacial river, on which delta is now situated the town of Browns Valley. This divided the waters of the glacial river, those going south remain in the bed of the canyon and form Big Stone Lake; the northerly part of the river was forced to the northward and its canyon forms Lake Traverse and the swampy marshy area here involved extending northerly to the Rabbit river. The lands alleged to have been flooded all lie on the floor of this canyon and a large part of them are covered with boulders and smaller rocks showing that they form a part of the bed of the river or subsequent lake. Being still practically a part of the lake bed, they are inevitably subject to overflow whenever the waters of Lake Traverse rise sub-

stantially above the elevation of 974. This condition is vastly accentuated by the Rabbit river, a strong, heavy, rapid stream, carrying a great volume of water at great velocity, entering the so-called Bois de Sioux at right angles, as shown on the map, thereby intercepting the flow of the Bois de Sioux and driving it back upon the lands in question. In 1880, 1881, 1882, 1888, 1897 and 1916, the strength of this river was so great that it turned the course of the Bois de Sioux directly the opposite of its natural flow and caused the accumulated waters of both the Rabbit and Bois de Sioux to flow southward until the entire canyon area was filled. (IV, 1944-52, 1954) It is of interest to know that some ten miles westerly of the canyon of Lake Traverse there is a smaller canyon, but of the same formation, which forms one of the outlets of the glacial river Warren and is now known as Cottonwood slough or Cottonwood lake. There is a vast amount of drainage from adjacent lands into this Cottonwood slough or Cottonwood lake, both ends of which find their outlet into Lake Traverse. The southern portion outlets into the southern part of Lake Traverse through a stream called Jim creek; the northern portion outlets into that part of the canyon which lies between South Dakota Mud lake and Club House lake. This northern outlet of Cottonwood slough or lake is so great in volume and velocity that it has built a delta across the canyon and divided the northerly reaches of the lake into the two parts known as South Dakota Mud lake and Club House lake, ex-

actly as the Mustinka river farther to the south has built a delta across the canyon dividing Lake Traverse proper from Mud Lake. (Defendant's exhibit 7, IV, 2174)

Attention is called at this point to the testimony of Professor Sardeson, a professional geologist, who testifies that early in September, 1917, he made an examination of conditions at the confluence of the Rabbit river with the Bois de Souix; that he found the banks of the Rabbit river at the confluence two feet higher than the west bank of the Bois de Sioux, so that the effect of the Rabbit river current was to push the Bois de Sioux over its west bank; that the current of the Rabbit had been so strong that it had eroded the west bank of the Bois de Sioux opposite the mouth of the Rabbit to such an extent as to carry away the sod and to carry pebbles as large as his fist part way up on the west bank of the Bois de Sioux; that the wash from the Rabbit had been so great that it had built a bar across the channel of the Bois de Sioux, the bar being particularly substantial on the west side so that the ordinary current of the Bois de Sioux had been compelled to flow around it to the east; these matters clearly indicating that the Rabbit river was much the dominant stream and unquestionably blocked the current of the Boise de Sioux and caused a backwater in the latter river to a substantial extent. (II, 872-873 & 875)

Professor Sardeson further testified that he made a careful examination of the alleged flooded

lands in the floor of the Bois de Sioux canyon; that he found the whole surface boulder-strewn, at many points heavily so, so that it created practically a boulder pavement, indicating clearly that it was the bed of the glacial river Warren and had the same character of floor as Lake Traverse itself. (II, 854-855, II, 892-893)

Professor Sardeson further testified that he made a careful examination of the soil on these lands to determine whether deposition of alluvial matter proved that they had been frequently inundated; that he found abundant deposit of such alluvial matter conclusively showing that the entire floor of the canyon had been repeatedly overflowed for a long series of years. (II, 854-855)

Professor Sardeson further testified that the formation of the floor of the canyon, the banks around it and the geological formation of the soil clearly showed that there was for a long time after the disappearance of Lake Agassiz a ponded condition of the present Lake Traverse site, and that such ponded condition unquestionably extended northward clear to the mouth of the Rabbit river. (II, 855-874)

It is established by the testimony of Professor Bass (II, 787) and by the plat and survey, defendant's exhibit 7, (IV, 2174) that on the Dakota side there are 360 square miles of drainage area into Lake Traverse itself and an additional 113 square miles draining directly into the Bois de Sioux river, making a total of 473 square miles in

the two Dakotas. The total drainage area into Lake Traverse is 1442 square miles, so that the 473 square miles in the Dakotas is almost exactly one-third of the total drainage area.

2. Artificial Drainage, Dakota Side.

The character of the 360 square miles in South Dakota draining into Lake Traverse; the drainage, natural and artificial, into the lake therefrom is thoroughly established by the testimony of August W. Hartage. (II, 677, 684) This witness is a competent and experienced civil engineer and was and had been for many years the county surveyor of Roberts county, which is the county in South Dakota lying immediately south of the North Dakota line. Mr. Hartage testified that the limits of the drainage area in South Dakota are correctly shown upon the map, defendant's exhibit 7; that he lives at Sisseton, in said Roberts county, and is thoroughly familiar with the drainage area upon the South Dakota side; that he had for the several years preceding 1917 worked extensively in this drainage area surveying for artificial drainage and putting in drainage systems. The whole area is hilly, some 100 feet above the lake and canyon and filled with sloughs and "pot holes". The outlet for all this area is into Lake Traverse by way of Cottonwood slough or Cottonwood lake. The southern outlet of this Cottonwood slough is Jim creek, which flows into the southerly point of Lake Traverse; and Dry Run, which flows into Lake Trav-

erse about the center thereof and has formed the delta between the parts called Mud lake and Club House lake. (II, 679) Mr. Hartage testified that he had been called upon to do a great deal of work in artificial drainage of the lands; that in addition to open ditches a great many tile drains have been installed and so extensive has been the tile drainage that two tile factories had been established upon the area, both of which have a large business. (II, 683) The purpose of these tile drainage systems is to carry the water off from the land quickly and also to drain sloughs and "pot holes"; that the sloughs and "pot holes" upon this area are very numerous, some of them 2 or 3 acres in extent, some of them 20, some 25 and up to 40 acres, with a depth of water from 2½ to 4 feet; that as soon as one farmer starts tiling, the others will all come in and put in a system. That all of this drainage has its natural outlet into Lake Traverse and that there is no other natural outlet for it. That the formation of the soil is 1½ to 4 feet of black soil and underneath clay and sand; that to get the best use of the land it is necessary to lay tile upon the top of this subsoil, the tile then carrying away all the surplus water. On cross-examination he testified that they had a severe flood on the Dakota side in the summer of 1915 and that this caused the starting of many and extensive tiling operations. (II, 695) They had no public ditch law in South Dakota until 1917, when a law was passed by the legislature using the Minnesota ditch law

as a pattern. (II, 696-697) Attention is also called at this time to the extensive system of public ditches in Richland county, North Dakota. The map, defendant's exhibit 111, (IV, fol. 3582) shows these ditches. Attention is called in particular to county ditch No. 3, which has its outlet across the Bois de Sioux valley and into that stream, it being across the lands of Taylor and Gajer, hereinafter referred to as tracts Nos. 27 and 28, respectively. A particular description of this ditch will be found at III, 1419-1421, and III, 1527-1529. Mr. Gajer speaks of this ditch as county ditch No. 5, but on the plat it is designated as county ditch No. 3. This ditch was constructed in 1905.

It is but fair to assume with the lands needing drainage, the legal machinery at hand and ditching operations going forward, drainage constructions in both North and South Dakota will become increasingly extensive and numerous. South Dakota has pending in this court against Minnesota an action identical with this one by North Dakota. Neither complaining state has manifested an intention to abandon its ditch construction and restore conditions to a "state of nature", nor an intention to refrain from exercising its natural right to drain its lands into the lake and river. Yet this court is asked to require Minnesota to do this very thing on its side of the line. Again, as to complainant's forecasted recurrence of floods on account of artificial drainage, how much is expected to be contributed by North Dakota and

South Dakota and how much by Minnesota is left wholly in the realm of conjecture.

3. Flooded Dakota land in Bois de Sioux valley.

(a) *Individual tracts, history and value.* We will now proceed with the individual tracts of land within the alleged flooded area, colored yellow on the map attached to complainant's bill as exhibit A. We think a brief description of what the record shows appertaining to the lands of each individual land owner will be helpful to the court and may serve as a basis for later comment. It will be observed that the state line between North and South Dakota bisects this yellow area practically at the center. The alleged flooded area is at the state line about two and one-half miles east and west and extends in a gradually diminishing width northerly to the juncture of the Rabbit river with the Bois de Sioux. This distance northerly from the state line is approximately twelve miles. For convenience we will start the description of these individual tracts at the southwest corner of the North Dakota flooded area, which is section thirty-two, township one hundred twenty-nine, range forty-seven. The name of this township is Fairmount, but it should be borne in mind that Fairmount township is long and narrow and the north half of it lies in township one hundred thirty, of range forty-seven.

Beginning then at the southwest corner of the alleged flooded area, we will first describe the west half of section thirty-two, then proceed with the descriptions westerly to the dividing line between North Dakota and Minnesota (Bois de Sioux river) and then take the lands in their order northerly, beginning each row of sections from the southwest corner. We give first the description of the land, then the name and residence of the owner and a brief description of the history of the land, its general character and the valuation for taxation purposes in the years material.

Tract 1.

W½ 32-129-47—320 acres—J. M. Kentzelman, Waterloo, Iowa. One-third hay land, two-thirds pasture land. Rental value of hay land $3.00 an acre and pasture land $1.00 an acre, per annum. Land fenced but little broken. (I, 178; IV, 1879) Soil stony and swampy; southeastern portion a swamp; government quadrangle (defendant's exhibit 74) shows forty acres open water in southeastern portion; no buildings. Owner did not appear upon the trial. Never was a man on this land who made a living on it. (IV, 1995) Awful poor section; always been nearly all slough and bog. (IV, 2044) Average elevation of this land about 973. (Defendant's exhibit 28, IV, 2175) Valuation for taxation:

1914	1915	1916	1917
$2534	$3032	$1620	$2784

(III, 1669; IV 2044).

Tract 2.

E½ 32-129-47—320 acres—H. W. Briden, Janesville, Iowa. Acquired land in 1912; no crop on land that year; 150 acres had been plowed and gone back to weeds; house, small barn and granary; no other improvements (III, 1685); bought at $40 an acre, total $12,800; paid cash $500; assumed mortgage $3200; traded in 100 acres unimproved land in Illinois got on mortgage foreclosure for balance. (III, 1682-1692-1693) Purchaser was told when he bought it that it had been repeatedly overflowed (III, 1689); shown on government quadrangle (defendant's exhibit 74) to be more than one-half swamp, and on government survey and plat (defendant's exhibit 108) as low, wet slough or western outlet of Lake Traverse; average elevation about 973 to 974. (Defendant's exhibit 28, IV, 2175) One eighty of this land had the valuation lowered in 1916, the valuation for the years material being as follows:

1914	1915	1916	1917
$528	$759	$324	$696

(III, 1669-70.)

This land has a history of being overflow land, and old settlers state that there never was a man who made a living on it. (IV 1995.)

Tract 3.

SW¼ 33-129-47—160 acres—John E. Bruns, resides on land. Bought in fall of 1913; paid $55 an acre; moved on in spring of 1914 (IV, 1773); land all broken except 20 acres; fair buildings; land quite high, having average elevation of about 977; no damage by flood in 1915; land all cropped; cropped the land in 1916; figures some damage by water seeping in from adjoining lands; no injury to buildings; no land flooded either year (IV, 1773-1786).

Not on list of lands on which valuation for taxation was lowered on account of floods (III, 1668-1669, 1670).

Land purchased from land agents; was formerly owned by Carl H. Johnson, who bought it in 1890 for $7.50 an acre. Johnson farmed it nineteen years till 1909; sold it for $27 an acre; in 1897 and 1898 land was wet, had poor crop; in 1897 all surrounding land flooded; also in 1907; flood lasted all summer; during seasons 1897 and 1907 Johnson used a boat to go to market at White Rock, South Dakota; also used boat to go to market nearly every spring and on one occasion went clear to the store, over a mile away, in the boat and tied the boat at the store (IV, 2026-2040). Mr. Johnson testifies that water stood on the surrounding lands and the condition of floods was just as bad as 1916 in both the years 1897 and 1907. (IV, 2031-2033)

Tract 4.

NW¼ 33, and W½ of SE¼ 28, the E½ of SW¼ 28, and E½ of W½ of SW¼ 28-129-47—360 acres —John A. Waddington, resident of Iowa.

Land in section 33 acquired 1913, price unknown; no one lived on it the year following; tenant there in 1915 and 1916; no damage by floods in 1915; slight damage in pasture in 1916; average elevation about 975, lying above surrounding land; fair buildings and improvements, not damaged by the floods. Not listed in lands on which taxable valuation was lowered on account of the floods. (III, 1571, Defendant's Ex. 28, IV, 2175.)

Homesteaded by man named Wetherby, who lived there fifteen years; sold it to Powell for $20 an acre (III, 1387-1388); Powell kept it three months and sold it to a land agent for $25 an acre. (III, 1388)

Land in section 28 acquired in 1911 for $35 an an acre; no buildings except granary; building not injured by floods; no fences; land formerly owned by Stafne, a non-resident; had been rented to tenants living on nearby lands (III, 1570); had history of not being entirely cultivated for many years (IV, 2038); this land all overflowed in 1897; bought by Wm. F. Houston in 1896 at $5 to $8 an acre (III, 1203); shown on Government quadrangle (Defendant's Ex. 47) and government survey and plat (Defendant's Ex. 108) to be crossed by large outlet of Lake Traverse, and northwestern portion, about 100 acres, swamp and overflow land.

Homestead by a man named Chilson, who lived their fifteen years and sold the land to Powell for $15 an acre; Powell kept it two years and sold to Andrews for $22.50 an acre. (III, 1389-1390)

Average elevation of land in W½ of SE¼ about 975; E½ of SW¼ 974; E½ of W½ of SW¼ 971; valuation for taxation:

1914	1915	1916	1917
$1558	$1879	$1814	$1726

(III, 1669-70).

Tract 5.

W½ of E½ of 33-129-47—160 acres—Ed. Erickson, lives on land.

Did not appear upon the trial; has fair improvements; land lies higher than surrounding land, average elevation about 974; not flooded in years 1915 and 1916, and not listed as lands on which valuation for taxation was lowered on account of the floods (IV, 2044).

Tract 6.

E½ of E½ of 33-129-47—160 acres—Charles L. Baker, Sumner, Iowa.

Bought land in 1912 for $25 an acre; small buildings, not injured by the water, but 110 acres was flooded in 1915 and practically all the land in 1916; (III, 1606) this land all designated on government survey and plat (Defendant's Ex. 108) as swamp and overflow land; shown as swamp land on government quadrangle (Defendant's Ex. 47)

except small portion in north part; southern portion is all in one of the northerly outlets of Lake Traverse; spoken of by old settlers as an awful poor quarter, low swamp, really slough (IV, 2043); average elevation about 972. (Defendant's Ex. 28, IV, 2175) Valuation for taxation:

1914	1915	1916	1917
$1194	$1919	$1338	$1391

(III, 1669-70).

Tract 7.

SW¼ and W½ of NW¼ 34-129-47—229 acres—G. F. Lundberg lives on land.

Fair buildings and improvements; bought tree claim right in 1888 on SW¼ for $190; bought W½ of NW¼ about 1907 for $10 an acre; 105 acres cultivated on quarter; 60 acres cultivated on eighty; land flooded in 1897; very little crop; bothered with water in 1893; in 1915 part of the land was flooded and part of the crop lost; in 1916 the land practically all flooded and had to go to town in a boat (IV, 1910-1914); average elevation of quarter about 972, and of eighty about 973. Quarter shown on government quadrangle (Defendant's Ex. 47) and on government survey and plat (Defendant's Ex. 108) as about half swamp. Valuation for taxation:

1914	1915	1916	1917
$1755	$2353	$978	$1860

(III, 1669-70).

Tract 8.

E½ of NW¼ of 34, and lots 1 and 2 of 27-129-47—86 acres—J. E. Swanson, resident of Canada.

Buildings old and poor; no one had lived there for three years; not over ten acres have ever been cultivated; very poor piece of land; lies along the river and subject to overflow (I, 188); always wet and what is know as the Swanson slough; could not have been hurt at any time by floods (I, 174); shown on government quadrangle (Defendant's Ex. 47) and government survey and plat (Defendant's Ex. 108) as entirely a marsh; average elevation about 971 (Defendant's Ex. 28, IV, 2175).

Not on list on which valuation for taxation was lowered on account of the floods.

Tract 9.

W½ of E½, or lots 1, 2, 3 and 4 of 34-129-47—92 acres—First National Bank of Breckenridge, Minnesota.

Acquired lands in 1902; no buildings; no evidence of any value; owner did not appear upon the trial; about 1896 this land was bought by William F. Houston for $5 to $8 an acre (III, 1203); average elevation about 971. Valuation for taxation:

1914	1915	1916	1917
$462	$869	$405	$667

(III, 1669-70).

Tract 10.

SE¼ of SW¼ of 20, and NE¼, W½ of 29-129-47—520 acres—Joseph A. Sauter, lives on land.

Good buildings; buildings not damaged by floods; 125 acres overflowed in 1915 and 50 acres in 1916; bought land in 1907 for $29 an acre; 200 acres bought in 1906 for $37.50 an acre (III, 1476-1478); this land has a history of being overflow land (IV, 1994-1995); flooding was along the natural drainage channel through the west half of section 29; channel has water in it practically every spring; it is about four to six rods wide and from a foot to eighteen inches in depth; it is the westerly outlet of Lake Traverse, and when the lake gets high water passes from the lake through to the north. Another natural waterway comes upon his land from the west about four rods wide and two feet deep, bringing in the drainage from the higher land to the west (III, 1486-1489). Average elevation about 975.

120 acres had the valuation for taxation lowered in 1916—balance not lowered:

1914	1915	1916	1917
$950	$1327	$551	$1044

(III, 1669-70.)

Tract 11.

SE¼ of 29, and W½ of W½ of SW¼ of 28-129-47—200 acres—Albert L. Waddington, lives on the land.

Acquired in 1902 (III, 1560); paid $27.50 an acre (III, 1569); no grove, orchard or fences at the time he bought it; small shanty formerly used as a school house and little barn (III, 1568-1569); in the year 1915 had no damage by floods and had the best crop he ever raised (III, 1561); in 1916 his land was flooded and he raised no crops; buildings not damaged by water (III, 1561); water came from Lake Traverse through natural channel or waterway at southeast corner of section 29 and southwest corner of section 28; this same channel being the westerly outlet of Lake Traverse (III, 1574-1575). This owner states that the railroad track stopped the water and backed it up on him, in this draw or ravine that forms the westerly outlet of Lake Traverse; that when the water in the lake is exceptionally high it always lets out to the north and west through his land (IV, 1575).

Average elevation of quarter about 977; of forty acres about 973 (Defendant's Ex. 28, IV, 2175).

Quarter section not listed among lands on which valuation for taxation was lowered on account of floods. On forty acres in section 28 the valuation for taxation was as follows:

1914	1915	1916	1917
$337	$611	$323	$538

(III, 1669-70.)

Tract 12.

NW¼ of 28 and SW¼ of 21-129-47—160 acres —Simon J. Strauss, non-resident of North Dakota; residence unknown.

Did not appear upon the trial and land not represented; no evidence of value; no buildings; no improvements; no evidence of any damage; entire northwest quarter of 28 shown on government quadrangle (Defendant's Ex. 47) and on government survey and plat (Defendant's Ex. 108) to be swamp and marsh land; all of southwest quarter of 21 shown as swamp land except western portion; defendant's witness W. F. Houston, testifies land not worth more than $5 to $8 an acre prior to the floods (III, 1203-1206); no evidence to the contrary. Average elevation of this land about 970. Valuation for taxation:

	1914	1915	1916	1917
NW¼ of 28	$1056	$1501	$510	$1146
SW¼ of 21	1056	1453	494	1109

Tract 13.

NE¼ and E½ of SE¼ of 28, and W½ of SW¼ and SW¼ of NW¼ and lot 3 of 27-129-47—386.50 acres—L. D. Butts, Fremont, Iowa.

Owner did not appear upon the trial and land was not represented. No evidence by complainant as to value; no evidence of any damage; small, poor buildings unoccupied for several years; no other improvements; small part of land broken up in dry years, and land described by defendant's witness Bruce as poor land, good for nothing but to hold the world together, never suitable for farming, filled with stone and alkali and never occupied except for brief periods in dry seasons. (IV, 1993-1994.)

Average elevation of land in section 28 about 972, and in section 27 about 971. Land in 28 shown on government quadrangle (Defendant's Ex. 47) and on government survey and plat (Defendant's Ex. 108) to be partly swamp and overflow land, and land in 27 shown to be very largely swamp and overflow land. Valuation for taxation:

	1914	1915	1916	1917
NE¼ of 28	$1023	$1469	$972	$1124
E½ of SE¼ 28	495	712	405	544
W½ of SW¼ 27	686	752	365	681
SW¼ of NW¼ and Lot 3 in 27	436	530	219	479

(III, 1669-70)

Tract 14.

Lot 4 of section 27, Lots 1, 2, 3 and 4 of section 22, all in 129-47, 127 acres—Fritz Quidding, Brook Park, Minnesota.

No settlement till 1889; had been taken as a tree claim, but abandoned. Acquired by Quidding in 1902 at $24 an acre, except lot in section 27 for which $35 an acre was paid; sold out in February, 1914, but remained on land through 1915; sold at $48 an acre; small buildings, building not injured by floods; overflowed prior to 1915 and 1916, but not for so long a period (III, 1583, 1594, 1595).

Defendant's witness Bruce testifies that north lot in section 22 was never plowed but once between 1902 and 1917; (IV, 1993) shown on government quadrangle (Defendant's Ex. 47) and on government survey and plat (Defendant's Ex. 108)

to be swamp and overflow land except the westerly portion thereof. Average elevation 971. Valuation for taxation:

	1914	1915	1916	1917
Lot 4, sec. 27	$238	$619	$162	$341
W½ of W½ or lots 1, 2, 3 & 4, sec. 22	950	1200	614	1174

(III, 1669-70).

Tract 15.

W½ of W½, E½ of NW¼ and NE¼ of SW¼, 20-129-47—280 acres—Orville C. Andrews, Fairmount, North Dakota.

Acquired land in 1909 from a land company; paid $50 an acre in trade for city property at Lexington, Ill.; then occupied by a tenant and had been for a great many years; fair buildings some run down (IV, 1792-1793); about 180 acres overflowed in 1915 and about 240 acres in 1916. This land is crossed by the westerly outlet of Lake Traverse; floods of 1915 and 1916 came up through this westerly outlet of Lake Traverse; in 1916 purchaser threw up his contract and returned the land to the land company (IV, 1799-1901); this land was overflowed in 1881, 1882, 1888 and 1897. (IV, 1991) This land has an average elevation of about 975, except that in ravine or westerly outlet of Lake Traverse which is 971. Valuation for taxation:

	1914	1915	1916	1917
E½ of NW¼ and NE¼ of SW¼	$950	$1233	$551	$1044

(III, 1669-70).

Tract 16.

E½ of 20-129-47—320 acres—First National Bank, Fairmount, North Dakota.

Land acquired from J. R. Blackmer in fall of 1913; Blackmer had homesteaded the land, but by 1913 he had accumulated thereon a first mortgage of $5,000.00, a second mortgage of $5,000.00 and unpaid interest of $3,000.00, making a total of $13,000; he received from the bank about $2,000.00 and went to Canada (IV, 1836-1838); land crossed by westerly outlet of Lake Traverse and had history of overflow in 1881, 1882, 1888, 1897 and 1907 (IV, 1990-1991); Blackmer had poor crops (IV, 1995); land sold by First National Bank of Fairmount to D. B. Martin in spring of 1915, payment of $5,500.00 made down in form of notes signed by Cartersville Irrigated Land Company, which notes bank placed in judgment but did not collect; land deeded back by Martin to bank in 1916 and Martin returned to Illinois (IV, 1841, 1842); average elevation about 976, except in northwest corner where it goes down to 972; shown on government quadrangle (Defendant's Ex. 47) and government survey and plat (Defendant's Ex. 108) to be swampy in northwest corner.

This land not listed among lands on which valuation for taxation was lowered on account of the floods.

Tract 17.

NW¼ of 21-129-47—160 acres less R. R. right-of-way—Jessie V. Greiner, non-resident of North Dakota; residence unknown. Owner did not appear and land not represented upon the trial; no buildings or improvements (I, 143) land has history of repeated overflow (IV, 1991); was formerly owned by Blackmer and was bought in 1896 by Houston for $7.50 an acre; only twenty acres broken; Blackmer had previously sold it for $2,000 on crop payment, but purchaser had abandoned it; no crop on the land at all in 1897 on account of overflow (III, 1203, 1204); sold by Houston in 1904 for $12 an acre (III, 1205; III, 1395); average elevation about 970; shown on government quadrangle (Defendant's Ex. 47) to be largely swamp and overflow land; also so shown on government survey and plat (Defendant's Ex. 108). Valuation for taxation:

1914	1915	1916	1917
$1228	$1469	$510	$1124

Tract 18.

E½ of 21-129-47—320 acres—James A. Westerman, Capron, Illinois.

Acquired NE¼ in 1914 (IV, 1848) from Roberts Lands Company, White Rock, South Dakota; paid $50 an acre in trade; traded two cottages at Beloit, Wisconsin, at $4,000.00, paid $1,000.00 cash and gave mortgage on land for $3,000.00; had traded Kansas land for the cottages (IV, 1851);

land company got the land from one Wheeler in 1911 and paid $30 an acre; Wheeler got it from the homesteader Juleen in 1908 for $18 an acre; Juleen lived there twelve or thirteen years (III, 1393-1394); no buildings except old one-story house and a granary; buildings had never been painted; this land was homesteaded in 1889 by Ole Juleen; had been flooded in 1881, 1882, 1888 and 1897 (IV, 1991-1992); Juleen had moved away in a boat in 1897 (IV, 1996); land lies within twenty rods of the channel of the Bois de Sioux river (IV, 1854); average elevation between 971 and 972. Valuation for taxation:

1914	1915	1916	1917
$1359	$1516	$571	$1199

(III, 1669-70).

SE¼ acquired in 1911 from Roberts Land Company, White Rock, South Dakota; paid $50 an acre in trade with stock of merchandise, boots and shoes and dry goods left over from general merchandise business (IV, 1862); stock of merchandise $2,000.00, mortgage on land $3,000.00 and cash $3,000.00 (IV, 1863); land acquired by Oscarson Company in 1904 at $15.00 an acre (IV, 1861); homesteaded 1889 or 1890 by one Jenson; few years later he sold out to Otto Anderson; Anderson lost it on a mortgage (IV, 1996); Roberts Land Company acquired it after a mortgage foreclosure on Otto Anderson, and paid $33 an acre (III, 1391); land overflowed and under water in 1881, 1882, 1888 and 1897 (IV, 1991); only one or two

crops, and very poor, between 1902 and 1915 (IV, 1993); average elevation between 971 and 972; government quadrangle (Defendant's Ex. 47) and government survey and plat (Defendant's Ex. 108) show arm of Bois de Sioux river extending through center of entire half section; land very stony and original buildings built of stone obtained on the land (IV, 1996). Valuation for taxation:

1914	1915	1916	1917
$1477	$1612	$734	$1360

(III, 1669-70).

Tract 19.

N½ of 17-129-47—320 acres—Herman G. Miller, Fox Lake, Wisconsin.

Acquired NW¼ in 1903 or 1904; acquired NE¼ in 1909; always occupied by tenant; about 74 acres flooded in 1915 on the northeast quarter, and in 1916 the whole of the northeast quarter and about twenty acres on the northwest quarter (IV, 1753); paid $33.50 for the northwest quarter, per acre, by trading eighty acres in Wisconsin which he had owned a year and a half and for which he had paid $25 an acre; buildings on the northwest quarter; homesteaded by one Alme, who lived on it about twenty-seven years, and when land bought by Miller buildings were small, poor, unpainted and there was no fence, no grove and no orchard (IV, 1759).

NE¼ purchased from Iowa parties at $33 an acre; no buildings except small granary; no fences, grove, orchard or other improvements; land not

cultivated when Miller bought it; showed some evidence of having been broken; land when he got it was grown up to weeds and had not been cultivated for at least three years (IV, 1760-1761); western outlet of Lake Traverse goes across southeast corner of this land and it was overflow from this that flooded the land (IV, 1763-1766); average elevation of NE¼ 971; average elevation of NW¼ 977; none of this land is shown on list on which valuation for taxation was lowered in 1916.

Tract 20.

SE¼ of 17 and W½ of 16-129-47—480 acres—Mary E. Clary, lives on the land.

Building on SE¼ of 17; no injury to buildings by floods; land overflowed in 1915 and in 1916; SE¼ of 17 acquired in 1909; moved on premises from Illinois in 1910 (III, 1618, 1619); had small house and barn, then occupied by tenant who had been on place five years; bought from Tuthill Land Company (III, 1624-1625).

SW¼ of 16 was bought for $50 an acre and NW¼ of 16 was bought for $40 an acre about the same time; this was also bought from the land company and about sixty acres of the SW¼ was under cultivation; no buildings on either of these quarters; no fences or other improvements; this land is crossed by the westerly outlet of Lake Traverse and was subject to overflow when the lake was high (IV, 1995); average elevation of SE¼, 17, 972; NW¼ 16, 971; SW¼ 16, 972. Valuation for taxation:

	1914	1915	1916	1917
SE¼ 17	$1529	$2058	$803	$1871
NW¼ 16	1267	1643	518	1392
SW¼ 16	1267	1643	518	1392

(III, 1669-70).

Tract 21.

SE¼ and W½ of NE¼ of 16-129-47—240 acres —John F. Broderick, Wahpeton, North Dakota.

Acquired lands in 1908; this land was overflowed in 1915 and 1916; dry in 1917 (III, 1672); paid $18 an acre for the SE¼ and $16.25 an acre for the W½ of NE¼; none of the land has ever been cultivated or broken; had a small shanty and a small barn; never had any other farm buildings or improvements; no fences; wild land and used for hay (III, 1677); SE¼ shown on government quadrangle (Defendant's Ex. 47) and on government survey and plat (Defendant's Ex. 108) to be all marsh and overflow land; E½ of the eighty acres shown to be the same; this land is crossed by a western arm or outlet of Lake Traverse and it is from there that the water overflows onto the land (III—1678 and 1679); average elevation of this land about 968; has always been subject to overflow (IV—1995); valuation for taxation:

	1914	1915	1916	1917
SE¼ 16	$660	$1612	$597	$1261
W½ of NE¼ 16	462	632	259	580

(III—1669-70).

Tract 22.

SE¼ of NE¼ and Lot 1, 16-129-47—72 acres—Joseph W. Gajer, Fairmount, North Dakota.

Bought in 1910; $12.50 an acre paid for part of it and $15 an acre for the balance; never been broken up; no buildings; no fences; no trees; wild land used for hay; ten or twelve acres next to the river not cut in 1914; overflowed by water of the river in 1915 and 1916 (III, 1514-1515); this land is crossed by the main Bois de Sioux river and by western arm of the Bois de Sioux river; has always been subject to overflow (IV, 1995); shown on government quadrangle (Defendant's Ex. 47) and on government survey and plat (Defendant's Ex. 108) to be all swamp and marsh land; average elevation 968; valuation for taxation:

	1914	1915	1916	1917
Lot 1	$172	$253	$105	$232
SE¼ of NE¼	211	316	130	290

(III, 1669-70).

Tract 23.

SE¼ of 8-129-47—160 acres—J. J. Nagel, lives in Illinois.

Did not appear upon the trial; testimony with reference to it given by L. N. Abbott, of Crandall, Flynn & Tuthill Land Company; no injury in 1915; about sixty acres overflowed in 1916; claims damage of about $400 (IV, 1872-3); land was acquired by F. N. McConn in 1909 for $40 an acre; McConn traded it to Denstedt for half interest in furniture

and hardware business; Denstedt traded it to the land company, and the land company sold it to Nagel (IV, 1903-1905), but representative of the land company cannot remember how much Nagel paid for it (IV, 1891); average elevation about 972; not listed as land on which valuation for taxation was lowered on account of floods.

Tract 24.

W½ of W½ of 9-129-47—160 acres—Earl Burgess, Peoria, Illinois.

Bought land in 1909; paid $45 an acre on contract; bought it from Mr. Sauter; never had any buildings on it; no fences; had been cultivated; owner never cultivated it himself, but had it in hands of tenants (III, 1433, 1435); average elevation about 971. Valuation for taxation:

1914	1915	1916	1917
$1267	$1643	$1037	$1160

(III, 1669-70).

Tract 25.

E½of NW¼ and W½ of NE¼, and lots 1, 2, 3 and 4, in 9-129-47—214.10 acres—Andrew Rydell, White Rock, South Dakota.

Acquired land December, 1914; house kind of shanty; small barn and granary combined; bought land from Crothers (bachelor) living alone on the land; had lived there seven years (III, 1452, 1455); Rydell had paid $50 an acre for it; cannot remember how much he paid in cash; says he put in a

garage at White Rock for $11,000 (III, 1457-1458); it was proved that the garage cost $4425 and that Rydell bought the one-half interest of his partner therein for $1500 (IV, 1939); he assumed a mortgage for $3000 and paid about $800 in cash; land lies along the Bois de Sioux river where there are practically no banks and the river spreads out into a lake; government survey and plat (Defendant's Ex. 108) shows all of lots 1 and 2, part of lot 3 and nearly all of the southeast eighty as swamp and marsh land; this was never calculated to be farm land and never was farmed until after 1900; was never considered agricultural land (IV, 1995); was part of a lake in 1881, 1882, 1888 and 1897 (IV, 1991-1997; IV 2004-2005); average elevation of E½ of NW¼ 970; W½ of NE¼ 969; lots 1, 2, 3 and 4, 968. Valuation for taxation:

	1914	1915	1916	1917
E½ of NW¼ and W½ of NE¼	$1109	$1636	$641	$1360
Lots 1, 2, 3 & 4	284	427	178	392

(III, 1669-70).

Tract 26.

W½ of SE¼ and E½ of SW¼, 9-129-47—160 acres—Newell N. Powell, White Rock, South Dakota.

Acquired land December, 1913; paid $40 an acre by trading quarter section of land at Barnesville, Minnesota, which he had owned two years and for which he had paid $30 an acre, paying the $30 an

acre for the Barnes land by trading an automobile and assuming indebtedness on the farm (III, 1379-1380); land had never been under cultivation and was broken up for the first time in 1914; some hay had been cut on it in previous years; raised thirty or thirty-five acres of flax on the breaking in 1914 (IV, 2053); land was purchased from Anderson C. Hiatt (IV, 2050); he acquired it from one Voge of Applington, Iowa, paying $25 an acre by trading in a number of horses, paying $700 in cash and assuming a mortgage on the land; Voge had just traded for the land when Hiatt bought it; Hiatt kept it three years and rented it for hay land at $2 an acre the first year, $2.25 the second year, and $2.50 the third year; these were the years 1911, 1912 and 1913, and were very dry years (IV, 2050-2051); government survey and plat (Defendant's Ex. 108) shows about half of the east eighty acres to be swamp and marsh land; average elevation of E½ of SW¼ 970, W½ of SE¼ 969. Valuation for taxation:

1914	1915	1916	1917
$1056	$1516	$ 518	$1160

(III, 1669-70).

Tract 27.

W½ of W½ of 4-129-47—160 acres—Wallace J. Taylor, Fairmount, North Dakota.

No buildings on this land, but owns the E½ of the E½ of 5 on which his buildings are located and which was not affected by the floods; his east

eighty was overflowed in 1915 and 1916; this eighty was covered with water in the spring of 1881 to about the same extent as in 1916 and also to about the same extent in the spring of 1897; there is a creek or ravine extending across about the middle of this eighty coming in from the west. The north and south highway passes between the two one-mile strips where this ravine is spanned by a twenty-foot bridge with clear space below the floor of sixteen feet. This bridge is necessary to carry the water from the west. There is quite a flow of water coming in from the west (III, 1413-1416). The water came in from the west in July, 1915; eight or ten years prior to 1915 a large area from the west was ditched into this coulee, a ditch five or six miles long, about six feet deep and sixteen feet wide on top; drains quite an extensive territory of flat and swampy lands (III, 1418-1419); it is a county ditch established and constructed under the drainage laws of North Dakota; this ditch helps to bring in waters from the outlets of Lake Traverse to the west; it drains waters onto this W½ of the W½ of section 4 that would not naturally come there; this owner objects to this drainage and says he should have served an injunction to prevent the flooding of his lands from the west (III, 1418-1421); average elevation 971. Valuation for taxation:

1914	1915	1916	1917
$1227	$1737	$1215	$1186

(III, 1669-70).

Tract 28.

E½ of W½ and SW¼ of NE¼ and W½ of SE¼ and Lots 1 and 2 in 4-129-47, and SW¼ of 33-130-47—572.60 acres—Joseph W. Gajer, Fairmount, North Dakota.

Buildings on SW¼ of 33; about 42 acres on SW¼ of 33 were overflowed in 1915 (III, 1497) about 90 acres in 1916; about all the land in section 4 overflowed both years (III, 1505).

Acquired SW¼ of 33 in 1903; paid $4500 or about $28 an acre (III, 1521). Acquired the E½ of the W½ and the SW¼ of the NE¼ of 4 in 1888 by preemption from the government and paid $1.25 an acre for it. Acquired Lot 1, section 4 in 1910 and paid $10 an acre for it. Acquired Lot 2 and the W½ of the SE¼ of 4 in 1910 and paid $12 an acre for it. Built his buildings at first on the E½ of the W½ of 4 when he preempted it from the government, and later moved buildings further west and onto SW¼ of 33 (III, 1519-1521); land adjoining river comprises 154 acres; never had any buildings on it except shanty; very little broken up; used for hay land; all his land in section 4 crossed by stream coming in from the west into which outlets county ditch No. 5 spoken of in connection with Tract No. 27, and this owner attempted to carry the ditch on down into the river but the water backed up on his land (III, 1527-1528); indicated on government plat (Defendant's Ex. 108) as largely marsh and swamp land; average elevation of easterly portion adjoining river 968

and westerly portion 969; this land is crossed north and south by the main Bois de Sioux river and westerly arm thereof and forms part of the flooded plain of the river; average elevation of SW¼ 33, 971. Valuation for taxation:

	1914	1915	1916	1917
E½ of SW¼ and SW¼ of NE¼, W½ of SE¼ and Lot 2, sec. 4,	$2218	$2859	$1021	$2277
Lot 1,	171	206	89	196
SW¼ 33,	1794	2375	1848	1893

(III, 1669-70).

Tract 29.

Lots 3 and 4, section 4-129-47, and Lots 1, 2, 3 and 4, and NW¼ of NE¼ of 33-130-47—221.53 acres—Ole Swivel, Sacred Heart, Minnesota.

Some buildings occupied by tenants who did not farm the land; buildings stood empty part of the time; land practically on level with the river and all of lots 1, 2, 3 and 4 of the NW¼ of the NE¼ of 33, except very small strip on westerly side, designated swamp and marsh land on government survey and plat (Defendant's Ex. 108), (III, 1746-1747); Swivel acquired the land in 1905 or 1906 (IV, 1748); formerly occupied by man by the name of Miske, who lived at Wahpeton, North Dakota, but who was not called as a witness by complainant; about thirteen years since any owner had

lived on it, when it was occupied by a man by the name of Spreckles (III, 1750-1751); average elevation of lots 3 and 4, in section 4, and lots 1, 2, 3 and 4 in section 33, 968; average elevation of NW¼ of NE¼ of section 33, 970; this land lies along the shore of an enlargement of the river known as Mud Lake; there are practically no banks to this so-called lake, and when the river rises the waters spread out upon the land (III, 1750). Valuation for taxation:

	1914	1915	1916	1917
Lots 3 and 4 in sec. 4,	$ 343	$ 513	$ 219	$ 471
Lots 1, 2, 3 and 4 & NW¼ of NE¼ of sec. 33,	1029	1612	568	1232

(III, 1669-70).

Tract 30.

NW¼ of 33-130-47—160 acres—Bert Kurtz, lives on the land.

No damage in 1915; about eight or ten acres overflowed in 1916 in a little ravine that goes across southeast corner and which is designated marsh; water came across from ravine from the west; same conditions of flooding in 1897 only that about one hundred acres was overflowed at that time (III, 1743-1744); average elevation 972; ravine in southeast corner between 969 and 970; this land not listed as being reduced in valuation on account of the floods.

Tract 31.

S½ of 28-130-47—315 acres—J. C. Hurdlebrink, lives on the land.

The southeast corner designated on government plat as lot 1, 35 acres. All of this lot 1 and about half of the eighty acres west of it designated on government plat as swamp or marsh land; about 110 acres overflowed in 1915 and about 140 acres in 1916; land overflowed corresponds to tract designated marsh (III, 1551).

Owner acquired land in 1901, paying $10,000.00 for this land and about 66 acres in section 4, designated as lots 3 and 4, paying $10,000.00 for 380 acres or about $27 an acre (III, 1554). He sold the two lots in section 4 in 1904 for $20 an acre; he lived on the south half of section 28 from 1901 on. In 1906 twenty-five acres of his land in the southeast corner was overflowed, and in 1907 fifty acres were overflowed, and in 1908 fifty acres were overflowed (III, 1556); average elevation of SE¼ of 28, 969, and of SW¼, 973. Valuation for taxation:

1914	1915	1916	1917
$2823	$3835	$3189	$3421

(III, 1669-70).

Tract 32.

NE¼ of 28, and lots 1 and 2 and the NW¼ of the NW¼ of 27, and the SE¼ of 21, and the W½ of the SW¼ and lot 1 of 22-130-47—557 acres—

Charles R. Pinkney, lives on the N½ of the NW¼ of section 28.

Home farm not affected by the floods. Has buildings on the northwest quarter of the northeast quarter of section 28 of the 557 acre farm; about 400 acres were overflowed in 1915 (III, 1299-1300) and about 450 acres were overflowed in 1916 (III, 1312-1313).

Acquired lot 1 and W½ of SW¼ of 22 in 1902, paying $36.50 an acre (III, 1323). This land is all designated upon government survey and plat (Defendant's Ex. 107), as swamp and marsh land; had no buildings on it and there never had been any; small portion under cultivation and land occupied by tenant (III, 1325-1326); overflowed in spring of 1906, that spring about 450 acres of the whole farm was overflowed (III, 1328).

Acquired SE¼ of 21 in 1902, buying it in connection with the land in 22, paying $36.50 an acre. It was owned by a man in Peoria, Illinois, who had owned it ten years; does not know whether any of the SE¼ of 21 had been cultivated prior to his acquisition of it; in the summer of 1908 about the first of July, 240 acres of this farm was overflowed (III, 1328).

Acquired lots 1 and 2 and NW¼ of NW¼ of section 27 in 1902; had no buildings on it and all the land, together with 60 acres on the east side of the NE¼ of section 28 is designated on government survey and plat (Defendant's Ex. 107) as swamp or marsh land corresponding with the area

overflowed in 1915 and 1916 (III, 1329); land was in crop when he bought it in 1902 but was so poor it was not harvested. This land in 27 was also overflowed in spring of 1906 and 1908 (III, 1330-1332); land in 27 and 22 lies along and is part of the flood plain of the Bois de Sioux river.

Average elevation of land in 27 and 22 about 967, land in NE¼ of 28 about 969, and land in SE¼ of 21, 970.

Valuation for taxation:

	1914	1915	1916	1917
SE¼of 21,	$1452	$1769	$1328	$1624
W½ of SW¼ and lot 1 in 22,	779	1098	381	841
NW¼ of NW¼ and lots 1 & 2 in 27,	660	1129	389	870
NE¼ of 28,	1794	2129	1892	2072

(III, 1669-70).

Tract 33.

NW¼of NE¼ and NE¼ of SW¼ and lots 2 and 3 in 22-130-47—152.50 acres—John H. Bolton (barber) Fairmount, North Dakota.

Acquired lands in 1911; lies within one and one-half miles of the village of Fairmount, and for thirty years did not have a foot broken nor any building or other improvement placed on it; was used for hay. Bolton bought it in 1911 for $2625, for the entire tract, or $17.50 an acre. He broke it up in 1912, which was a very dry year; also cropped it in 1913 and 1914; placed small buildings on it in 1914 (III, 1357-1361); whole tract over-

flowed in 1915 and 1916 and again in the spring of 1917 (III, 1347). This land lies adjacent to the Bois de Sioux river and is part of its flood plain. Its average elevation is 967. Valuation for taxation:

1914	1915	1916	1917
$1115	$1631	$ 566	$1216

(III, 1669-70).

Tract 34.

NW¼ of 22-130-47—160 acres—B. W. Schouweiler, Fairmount, North Dakota.

Land overflowed in 1915 and 1916 and partially in spring of 1917 (III, 1269-1270); acquired land in 1910 from patentee from the government and paid $31.25 an acre or $5000 for the entire quarter (III, 1274-1275); land lies a mile east of village of Fairmount; was taken as a tree claim from the government about 1880; never had any buildings on it nor improvements of any character except that one eighty was plowed up and seeded to tame grass; was plowed up for the first time in 1911, a very dry year (III, 1272); overflowed from the river in spring of 1888, 1897, 1906 and 1907 (III, 1274); Schouweiler cropped it in 1911 and in 1912 and in the fall of 1913 sold it with the crop on it for $50 an acre; purchaser paid $2000 down and was to pay interest on deferred payments of $6000 at 6%; purchaser cropped the land in 1914, but did not pay the interest in the fall of 1914 and his contract was cancelled, so lost the

$2000 (III, 1277-1279); Schouweiler had the crop in in 1915 and claims damage for its loss (III, 1280); average elevation of this land 968 and is part of the flood plain of the river. Valuation for taxation:

1914	1915	1916	1917
$1267	$1501	$ 518	$1146

(III, 1669-70).

Tract 35.

SW¼ of 15-130-47—160 acres—J. A. Ennis, Elmwood, Illinois.

Acquired the land in 1910; paid $7000—$44 an acre; was overflowed in 1915 and 1916; occupied by tenant; formerly owned by Reed, land man, Peoria, Illinois; no buildings; no fences; no grove, orchard or other improvements; 100 acres broken up when he got it (IV, 1892-1900); average elevation about 969; this land lies about the same elevation as the river, but the river banks are about three feet above the adjacent land, and the water flowed on to this quarter from tract designated as No. 33 (John H. Bolton). Valuation for taxation:

1914	1915	1916	1917
$1023	$1461	$1239	$1117

(III, 1669-70).

Tract 36.

W½ of NE¼ and lots 3 and 4 of 15-130-47—112 acres—Peter G. Smith.

Lives on NW¼ of 10-130-47, but his home farm was not affected by the floods; lived on his home

farm since about 1880, but did not buy the land in section 15 until 1893 (III, 1532); bought the land from a Mr. Spaulding who had just acquired it under a mortgage foreclosure; Smith paid $20 an acre on crop payments; land never had any buildings on it or fences, or trees, or other improvements; when Smith got it a few acres had been broken but had gone back (III, 1541-1542). In the spring of 1881 it was all under water; also in the spring of 1897 (III, 1542); been flooded three or four years since he knew it; this land shown on government survey and plat (Defendant's Ex. 107) as swamp and marsh land, and the swamp and marsh land so designated corresponds to the area overflowed (III, 1543); land lies adjacent to the river and is part of its flood plain; average elevation about 967. Valuation for taxation:

1914	1915	1916	1917
$ 746	$1081	$ 373	$ 827

(III, 1669-70).

Tract 37.

NW¼ and lots 3 and 4 in 3-130-47—228.60 acres —Martin and Anton Bibo, Peoria, Illinois (III, 1711).

Owners did not appear upon the trial, but testimony was given by E. N. Nelson, tenant, that the lands were not overflowed in 1915, but were in 1916; that the fair rental value in 1916 was $740 and in 1917, $1075 (III, 1709), but this is figured on the basis of raising wheat on 210 acres of culti-

vated land and at the prices then obtainable (III, 1709); overflowed in spring of 1881 (III, 1703), and in springs of 1888, 1896, 1897 and 1907 (III, 1704-1705); in 1881 and 1897 as well as 1916 the Bois de Sioux river overflowed its banks to the north of this land and the waters ran over into the Wild Rice river, flooding the lands between (III, 1706-1707); one small building but no one has ever lived on the land; no grove, orchard or fences (III, 1711); average elevation about 968, and its overflow caused by the backing up of the waters of the Bois de Sioux caused by the influx of the Rabbit river (IV, 1941-1952, 1979-1981); this land not listed as those on which valuation for taxation was lowered in 1916.

(b) *Periodically flooded.*—Edward Joy (IV, 1941, et seq.) testifies that from 1879 he lived in the town of West Campbell, Wilkin county, Minnesota, within about a mile of the confluence of the Rabbit river with the Bois de Sioux river; that in April and May of 1880 the Bois de Sioux river was out of its banks all the way from its confluence with the Rabbit river south as far as he could make an observation; that the river was nearly a mile wide at the confluence of the Rabbit and grew wider and wider as it went south; that at the point where the town of Fairmount is now located (about two miles south from the confluence of the Rabbit) it was about a mile and a half in width; that at

the point where Mud Lake is in section 27-130-47, it was all a lake and they used to go fishing there; that that spring the Rabbit river left its banks some distance west of the confluence, ran over the intervening territory and forced the Bois de Sioux current to the south until the entire area in the Bois de Sioux canyon was filled up (IV, 1945); that in the summer of 1880 they had a very heavy rainfall in June and the Rabbit river again rose and forced the Bois de Sioux to the south and flooded the same territory again; that it was practically as high as in the spring of that year, but that the lake surface was not quite so wide; that in the spring of 1881 the conditions were worse and the flooded area greater; that in 1881 the Rabbit river was very wide, left its banks and ran southwesterly into the Bois de Sioux and forced the Bois de Sioux to the south; that from the Rabbit river south to Mud Lake the Bois de Sioux was a mile and a half wide at its widest point and farther south it was two miles and a half wide, the whole country there looked like a sea; that at Mud lake the river was fully two miles wide; that in June of 1881 there was a great deal of rainfall and the rivers again came up and flooded the lands around the confluence (IV, 1946-1948). In April of 1882 very nearly the same conditions obtained. The Rabbit river was so high that it forced the Bois de Sioux to the south and all the low land in the valley was again filled up (IV, 1949). That in the spring of 1883 the conditions were nearly as

bad; that the Bois de Sioux river was forced to the south again, and down opposite the site of Fairmount and clear down to Mud lake it was a mile and a half to two miles wide (IV, 1950); that there were similar conditions of flood in the spring of 1884, but no summer flood in 1884; that in the springs of 1886 and 1887 similar flood conditions obtained; in 1888 it was still worse, the Rabbit river ran over its banks and forced the Bois de Sioux to the south (IV, 1951). The seasons were then quite dry for five or six years and no more floods were experienced until 1897 when the Rabbit river again overflowed its banks and forced the Bois de Sioux to the south and the river got as wide as it had in 1881 and 1888 (IV, 1952). That in July, 1915, the Rabbit river rose very noticeably but did not hold back the Bois de Sioux; that in the spring of 1916 the Rabbit river went over its banks, ran southwesterly and again blocked the flow of the Bois de Sioux and flood conditions obtained the same as in 1881, 1888 and 1897 (IV, 1954).

Ferdinand A. Oestreich lived within fifty rods of the Bois de Sioux river on the Minnesota side, about a mile south from the town of Fairmount. He testifies that in the spring of 1897 the flooded condition in the Bois de Sioux valley was worse than in 1916, but that in both of these years the Bois de Sioux river for several days reversed its current and flowed to the south; that in 1916 in their township there was practically a crop failure on account of wet conditions (IV, 1976-1979).

Wilder E. Bruce testifies that he lived on the NW¼ of section 26, in the town of West Taylor, Traverse county, Minnesota (Twp. 149. R. 27), since the spring of 1881, the place of his residence being about a mile and a half north of the south line of North Dakota and about half a mile west of the Bois de Sioux river; that in the spring of 1881 he attempted to come down from Wahpeton, North Dakota, to his place with a yoke of oxen; that he was unable to get through on account of the water and left the oxen at a place on section 3-130-47, being the northerly portion of the township of Fairmount; that he went across the river and stopped with an uncle, on the east side of the Bois de Sioux, and had occasion thereafter to go to and from the place where he left his cattle in order to take care of them; that the river at that time, immediately south of its confluence with the Rabbit river, was so wide that the whole country was a lake; that the current was running strongly to the south; that he knows this because he attempted to go across in a boat and the current was so strong that it carried him a mile and a half to the south; that there was one settler on the north side of section 10 whose buildings were all washed away except a straw shed on which the hay was piled up high and on top of the hay was a pig, which was the only living thing in the Bois de Sioux valley; that a mile or two south of the confluence with the Rabbit river the river was two or two and one-half miles wide; that the width of

the river, including sections 20 and 21, 129-47, being the land mentioned in tracts 15, 16, 17 and 18, was three miles wide; that you couldn't see an acre of land from bluff to bluff (IV, 1984-1989).

He further testified that until 1889 or 1890 the Bois de Sioux river was not considered to have its source until a point was reached north of Mud lake in section 33-130-47, and that all of the Bois de Sioux valley to the south of that was uniformly known as a part of Traverse lake or the Traverse lake marsh (IV, 1989-1990); that in 1882 and 1883 all of this marsh was covered with water; that in the spring of 1888 the current of the Bois de Sioux river was again flowing to the south; that in 1897 the same conditions obtained, the river flowed to the south until the flats were entirely filled up (IV, 1991-1992); that there were dry years from 1889 to 1907 during which some portions of these flats were cropped (IV, 1993).

This witness, an exceptionally intelligent man, states that all of the lands south from section 27-129-47 were of no value for agricultural purposes; that he knew the lands thoroughly and if he was obliged to go upon them to make a living he would not accept them as a gift (IV, 1997).

(c) *Effect of Roads.*—There can be no question that the floods in the Bois de Sioux valley in 1915 and 1916 were greatly aggravated by the presence of numerous roads directly across the valley east and west and in several instances extending en-

tirely across the Bois de Sioux channel proper without any openings therein. These roads were all on the Dakota side.

The first of these is what is called the White Rock road, a profile of which will be found on Defendant's Ex. 29, p. 2176. This road extends directly west from the village of White Rock and its elevation is 975.4 (II, 778). Through this road there is an opening or bridge in the main Bois de Sioux channel at the easterly side where that channel forms the dividing line between Minnesota and Dakota, which opening is only twenty-eight feet in width. There are then seven other distinct openings at intervals to the westerly bank of the valley showing seven distinct arms or branches of the lake extending northerly across the floor of the valley, in addition to the main channel east of White Rock. These openings are spanned by small culverts and bridges, but were entirely inadequate to discharge the overflow of lake Traverse to the north and the water ran over the road.

From this White Rock road northerly there is an east and west road on nearly every section line, and these successive roads had the effect of creating a ponded condition as each was overflowed by the water running northward, and as the fall on the surface of the ground is only three-tenths of a foot per mile these roads seriously affected the hydraulic gradient and went far to prevent the free outflow of the water to the north (II, 874-875).

August W. Hartage, county surveyor of Roberts county, South Dakota, which is the county immediately south of the North Dakota line, testifies that between July 2 and July 9, 1915, at the time of the summer flood, which was then at its height, he made an examination of the Bois de Sioux channel from White Rock to the north; that he found at least two of these roads had been built of stone, manure, hay and weeds entirely across the Bois de Sioux channel and completely blocking it up; that he also found the weeds, grass and rushes growing very think and heavy in the old Bois de Sioux channel, which very materially blocked the flow to the north (II, 686-692).

(d) *How damages are computed.*—As heretofore stated complainant is not entitled to recover damages. Evidence introduced by complainant with reference thereto is material here only for the purpose of determining whether they are sufficient in character and extent to entitle complainant to equitable relief in case it is otherwise entitled thereto. With this understanding we will proceed with a consideration of damages, the character and extent thereof, and the method adopted by complainant in computing the same.

In complainant's brief, page 140, a table is prepared and submitted to the court, listing the so-called damages on account of these floods. We will give one typical instance of the manner in which these damages are made up. We take the case of J. W. Gajer (III, 1502-1532).

This landowner first testifies that he owns 572 acres; that 50 acres of this was not flooded in 1915 and 1916; that the remainder of his land, to-wit: 522 acres, was flooded. He states that upon this 522 acres he had in July, 1915, the time of the flood, 135 acres of wheat; that he figures that this wheat would have yielded 20½ bushels to the acre; that had he harvested and marketed the wheat it would have brought 95c a bushel. He then figures out an estimate of what it would have cost to harvest, thresh and market the wheat and claims the difference as his lost profit, i. e. his damage.

He then says he had upon the flooded area 72 acres of barley, which he estimates would have yielded 31 bushels to the acre and for which he would have received 60c a bushel; he then deducts an estimated expense for harvesting, threshing and marketing, and claims the difference as lost profit or damages.

He then says he had 12 acres of flax, on which he computed his damages in the same manner.

For the year 1916 he computes his damage in this fashion: He says that he "aimed to" put in 209 acres of wheat; that it probably would have yielded nine bushels to the acre; that he would probably have received for it $1.40 a bushel; he then deducts an estimate for seed, harvesting, threshing and marketing, and claims the balance as his lost profit or damage. He also "aimed to" put in in 1916, 20 acres of corn, 20 acres of barley, 150 acres of flax and 132 acres of oats, on all of which he

figures his loss of profit or damage in the same manner. The aggregate amount of damages for 1916, as thus computed, is $5022.25, or about $10 per acre on the flooded land.

His damages for 1917 he computes in this fashion: He says 1917 was a better crop year than 1916, and he therefore figures that his loss of profit on the 522 acres was $15 an acre instead of $10, thus making his lost profits or damage for 1917, $6150.

He then adds the damages for the two years of 1916 and 1917 and takes 55% of the combined amount as his net loss for those two years, on the theory evidently that he might have had the land farmed by a tenant, instead of himself, and that his share as owner would have been 55%.

It will be plainly observed from this testimony that he "aimed to" put in in 1916 and 1917 every foot of his land, including his wild hay land—88 3/4 acres, all his tame hay land—20 acres, and all his pasture land—25 acres, and to make the 522 acres he would have to put in all the roads on his farm, all the river bottom and the site of his buildings, grove and orchard, a thing which he had never thought of doing before in his life. Evidently to make the damages round figures counsel for complainant in his brief has added three acres, making the total area flooded 525 instead of 522 acres.

He then figures a number of trees at $25 apiece, and then $5 an acre on the entire 522 acres as the

cost of restoring the land to its former condition of cultivation.

This brings his total damage up to $12,676.48, which he expects the state of Minnesota to pay him as his loss for the three years; or in lieu thereof he figures that the impairment in the market value of the land was $39,375., that is, he takes the 522 acres and figures its value $75 an acre and that it was totally destroyed beyond any possibility of restoration. After the total value of the land has been paid he expects also t keep the land the same as before.

The same wild, reckless and extravagant statements characterize every computation of damages submitted to the court in the table in complainant's brief, and the court is gravely told that it is a fair method of computing the damages.

We submit that the proper measure of damages for 1915 would be the value of the crop as it stood in the field at the time of the flood, and for 1916 the measure of damage would be the fair cash rental value of the lands of which the use was lost. There is evidence in the record that the fair cash rental value of these lands was from $2 to $4 an acre (Complainant's witness Hurdlebrink, III, 1549, 1558), but under the method used the damage is from $10 to $28 per acre. Fully one-fourth of the entire record is taken up with these extravagant claims for damages.

In passing we might further submit that the alleged damages for 1917 were totally immaterial

under the bill of complaint, as the bill of complaint was filed in November, 1916, and the damages for 1917, of course, had not accrued until nearly one year after the filing of the bill.

It is significant that the valuation for taxation on these alleged "totally destroyed lands" for the year 1917 is in almost every instance greater than the valuation fixed in 1914 before the floods.

Generally in reviewing this evidence as to damages we call attention to the extravagant claims made in the bill of complaint herein as contrasted with the facts proven. It is alleged in the bill that the flooded lands comprise eighty farms, embracing an area of 12,000 acres, all whereof were improved and in a high state of cultivation and among the most valuable, fertile and productive comprised within the entire domain of North Dakota (P. 12, Bill of Complaint). The record shows thirty farms embracing an area of 6074 acres, practically every one of which was subject to overflow in prior years, of very little value, cultivated only in dry seasons, very poor improvements and what is commonly termed "trading stock."

It is further alleged that said lands had been for upwards of thirty years held and owned by citizens of North Dakota. Of the owners the proof shows that only fifteen were citizens of North Dakota; that the rest were all non-residents and citizens of other states, several of them being citizens of the state of Minnesota.

It is also alleged that there had been constructed on said lands by public authorities various public

improvements, including highways, bridges, culverts and public buildings of the value of $35,000. The proof shows that the only public building on the area was one old school house of the value of about $350 and which was not damaged by the floods (III, 1389); that although there was some damage to town roads, bridges and culverts, no proper estimate in dollars and cents can be made thereof.

It is alleged (p. 24, Bill of Complaint) that there was a loss to the occupants of the land in 1915 alone of $150,000. Under the extravagant claims made the proof shows a loss of $65,492. It is alleged that there was a loss in 1916 of $100,000. The proof shows the combined loss of 1916 and 1917 to be $51,908, even making use of the extravagant and unwarranted method hereinbefore mentioned.

It is alleged that the citizens have suffered a loss of over one million dollars. The proof shows that if the land were totally destroyed it would amount to $293,000, according to the valuation of the owners. The actual market value of the lands as shown by the cross-examination was at no time more than one-third to one-half of the claim made.

4. Drainage Area, Minnesota Side.

(a) *Mustinka River Watershed.* On the Minnesota side, beginning at the southwesterly extremity of lake Traverse proper, the easterly shores are quite sharply defined and rise immediately from the lake to a height of three to eight or ten feet, the shore of the lake being rocky and boulder-strewn. Above the three to ten foot rise there is a shelf of land extending easterly for several hundred feet, which shelf has never overflowed and which is in cultivated farms. At the easterly edge of this shelf the banks rise very abruptly to about one hundred feet. It should be noted that this portion of Lake Traverse from the southwesterly extemity to the influx of the Mustinka river, a distance of about twenty-five miles, is the shore of a true and permanent lake (II, 766-768; II, 1074). On this portion of the lake there are five grain elevators, three on the Dakota side and two on the Minnesota side. Wheat barges ply on the lake and transport wheat from these elevators to Browns Valley; there are also pleasure boats on the lake, some cottages along the shore and it is quite a pleasure resort (II, 767; II, 1080). At the influx of the Mustinka river, which is in section 31, township 127, range 47 (Map, defendant's exhibit 7, 2174), the easterly shore is much lower and the land for some distance back from the lake is marshy. As has been stated, the Mustinka has

built a delta across the lake at this point, and through this delta there is a channel some one hundred feet wide which is spanned by a bridge called the interstate crossing. A road is graded on either side of the bridge making a substantial roadway across the lake at this point. This delta is some two miles north and south, and the part of the lake northerly is called Mud lake. We designate it here as South Dakota Mud lake to distinguish it from the small lake in the North Dakota area which is also called Mud lake and which may be designated as North Dakota Mud lake. South Dakota Mud lake is a large, permanent body of water surrounded by marshy lands. The delta on the westerly side then separates the lake again, the part to the north being called Clubhouse lake, this delta being formed by the Cottonwood run on the Dakota side. On the easterly side the lake surface gradually narrows until it becomes quite a narrow stream about a mile and a half south of White Rock, and from that point it is designated as the Bois de Sioux river and forms the state boundary between Minnesota and the two Dakotas (II, 769-773). Reference may well be made here to defendant's exhibit 24, being the plat of this lake made by the United States army engineers, also to document No. 1391, 61st Congress, 3rd session, defendant's exhibit 25; and document No. 439, 64th Congress, 1st session, defendant's exhibit 26; and document No. 199, 65th Congress, 1st session, defendant's exhibit 27; reports upon a pro-

ject to make the three different portions of lake Traverse more navigable and put in a draw bridge at the interstate crossing.

On the Minnesota side of South Dakota Mud lake and the gradually narrowing stream which forms the Bois de Sioux, the banks rise quite abruptly from the elevation of about 973 to 1000 and above, this elevation continuing nearly to a point opposite Fairmount, North Dakota, where it then lowers into the plain of the Rabbit river. There is but a relatively small area of low land on the Minnesota side of the Bois de Sioux river in the area colored yellow on complainant's Ex. 1. The lands in Minnesota which are especially material here are those which begin about 5 miles easterly of the Bois de Sioux river and lake Traverse and lie between a line drawn east and west through Fairmount on the north and a line drawn east and west through the mouth of the Mustinka on the south. The high land, about at the height of the eastern bank of the lake and Bois de Sioux river continues easterly about four or five miles when it slopes down into the plain of the Mustinka river. This plain of the Mustinka river is below 1000 feet elevation. Easterly of the Mustinka river bed the land rises quite abruptly above 1000 feet, but on the westerly side there is an area varying from two to three miles in width which lies at an elevation of about 995. This strip of land which extends from a point about three miles below southwesterly of the line of the C. M. & St. P. Railway as it passes through Wheaton to a dis-

tance of about six miles northeasterly of the railway to a point called in evidence Swedish Church may properly be called the flood plain of the main Mustinka river, and it is accurately mapped on defendant's Ex. 73 (IV, 2182; III, 617). This main Mustinka river flood plain will become of particular importance in our further discussion.

About at the southern extremity of this flood plain but on the easterly side a stream called Eighteen Mile creek enters the Mustinka, but which will not become material. We may speak of the Mustinka river from the point where it is joined by the cut-off ditch in section 23, of township 128, range 46 (the town of Monson), southwesterly to its outlet as the main Mustinka. Reference may here be made to the map, defendant's Ex. 7 (IV, 2174). Before the construction of the cut-off marked on the map as a part of the Mustinka state ditch known as state ditch No. 19, the main Mustinka had its beginning near the northeast corner of section 12, township 128, range 46. The main Mustinka at the point last mentioned was formed by the confluence of three distinct streams, i. e. the upper Mustinka coming in from the east from Grant county in that part of complainant's Ex. 1, called the Morain zone; a smaller stream coming in from the southeast called the Five Mile creek, and a larger, stronger, heavier stream directly from the south called the Twelve Mile creek. These streams are accurately designated on the maps, defendant's exhibits 6 (IV, 2173) and 7 (IV, 2174).

It may not be out of place to state that these creeks derive their names in this manner; Herman is the oldest town in that portion of the state. This town will be found on the line of the Great Northern railway in the town of Logan, Grant county, Minnesota, as shown on defendant's Ex. 7. Five mile creek is so named because it is five miles westerly of Herman; Twelve Mile creek because it is twelve miles westerly, and Eighteen Mile creek because it is eighteen miles westerly.

As we have seen, the total area naturally draining into lake Traverse and the Bois de Sioux river comprises 1442 square miles, of which 473 or substantially one-third lie in North and South Dakota, and 969 square miles or substantially two-thirds lie in Minnesota. Of the Minnesota area 45 square miles drain directly into the Bois de Sioux along its easterly shore, leaving 924 square miles as tributary to Lake Traverse. Of this, 131 square miles drain directly into the lake and 793 come in through the Mustinka river. Of this 793 square miles 67 drain through Eighteen Mile creek and are not here material. This leaves an area of 726 square miles (II, 788) or almost exactly fifty per cent of the total drainage area into the lake and river. It may be noted here that only fifty per cent of the total area draining into Lake Traverse and the Bois de Sioux river is at all material to this case. All of the discussion and all of the complicated and elaborate argument in complainant's brief has to do with only fifty per cent of the total area

naturally draining into Lake Traverse and the Bois de Sioux. The other fifty per cent of the total drainage area into this lake and river is totally ignored in the brief and argument submitted in behalf of the complainant. For this reason we have attempted to give to the court a fairly complete description of the balance of the drainage area. Putting the matter another way we might say that the total drainage area may be divided into sixths, of which two-sixths lie in the Dakotas and four-sixths in Minnesota. Of the four-sixths in Minnesota one-sixth has nothing to do with the Mustinka river drainage and the three-sixths is all that is here material (II, 788).

Coming now to a discussion of the Mustinka darinage area proper it will be noted that it comprises 726 square miles instead of 750 as claimed in complainant's bill and brief. The reason for this material difference of 24 square miles, which it is admitted upon the record should be eliminated, will be made apparent in our discussion of the testimony of George A. Ralph.

It is true, as stated by complainant, that for some twenty miles easterly of the lake and river the land is of a general level formation, but having a slope of about five feet to the mile toward the north and west. As heretofore stated, this level land is the bed of the prehistoric lake Agassiz and lies below what is called the Norcross beach, Norcross being a town on the line of the Great Northern railway north from the town of Herman be-

fore mentioned. It is proper enough to speak of this former lake bed as a prairie zone. It is true that the land easterly of the Norcross beach rises very abruptly, finally attaining a height of about 1200 feet and forming a sort of plateau about three or four miles in width. This plateau, however, is not a hillside, but simply a region of rolling land filled with low hills, small lakes, sloughs and streams.

The upper Mustinka river rises in the extreme northerly part of this so-called moraine zone, flows southerly through it and then turns westerly in township 128, range 43. But the area in this moraine zone tributary to the Mustinka river is but 203 square miles, which is twenty-nine per cent of the total area draining into the Mustinka river. We mention this in particular because a great deal of capital is made in complainant's bill and brief about the enormous run-off from this moraine zone. It should be kept in mind that this entire moraine zone forms only twenty-nine per cent of the area draining into the Mustinka river and that it forms only about fifteen per cent of the total area draining into lake Traverse and the Bois de Sioux. It is the run-off from this area that is largely relied upon as sustaining complainant's contention and as causing the floods in the Bois de Sioux valley.

The Five Mile creek drainage area is 121 square miles, or about sixteen and two-thirds per cent of the Mustinka drainage area. The balance of the

drainage area is that tributary to the Twelve Mile creek, which is 364 square miles, or fifty-four per cent of the Mustinka drainage area. Let it be noted here that without the intervention of the Mustinka state ditch or any other ditch, the run-off from the 364 square miles of Twelve Mile creek drainage and the 121 square miles of Five Mile creek drainage joined the Mustinka river at a point where the main river turns and runs south-westerly and would, and did in a "state of nature", carry the water into lake Traverse, the overflow continuing northerly into the Rabbit river. Seventy-one per cent, therefore, of the Mustinka watershed had its waters carried normally through the main Mustinka river directly into lake Traverse (II, 787-788, defendant's exhibits 6 and 7; IV, 2173-2174).

(b) *Overflow into Rabbit River.* Over the area extending from the Great Northern railway on the east line of section 20, township 128, range 44 (being the town of Gorton in Grant county) westerly and northwesterly to the confluence of the several branches of the Mustinka river, there has always been a large overflow of flood waters to the north and west. These waters collected in a large slough or swampy area about one mile in width east and west and some four miles in length north and south in sections 19, 30 and 31 of township 129, range 45, Traverse county (being the town of Tintah as shown on the map, defendant's Ex. 7). This area is known as the Tintah slough.

This Tintah slough is drained by a branch of the Rabbit river running nearly northerly from this point. In 1910 a large judicial ditch was constructed, known as judicial ditch No. 9, which took the waters from this Tintah slough on northerly and into the Rabbit river. The elevation of the land around the confluence of the several branches of the Mustinka falls to 998. The banks of the river are substantially this height. This permits of a large overflow of the water in times of flood from the confluence of the branches of the Mustinka over into the Tintah slough and on into the Rabbit river. The construction of the Mustinka state ditch had no effect upon this overflow and it continued the same in the spring and summer of 1915 and 1916 and in the spring of 1917 the same, and in greater quantities, than before.

5. Artificial drainage on the Minnesota side.

(a) *First Mustinka State Ditch.* In 1893 the legislature of Minnesota enacted Chapter 221 of the laws for that year appropriating in general terms a sum of money for the use of the state drainage commission for the drainage of state swamp lands in Grant, Traverse, Wilkin and other counties. In 1895 Chapter 164 of the laws of that year was enacted for the same purpose and in the same general terms (IV, 2144-2145). These laws were enacted solely for the purpose of enabling the state drainage commission to drain swamp lands grant-

ed to the state under the provisions of the Act of Congress of March 12, 1860. (IV, 2151, and map, defendant's Ex. 116, not reproduced in printed record).

In 1894 the state drainage commission, for the sole purpose of draining the state swamp lands in Grant county, caused a ditch to be constructed, commencing in section 20, township 128, range 45 (being the town of Redpath as shown on defendant's Ex. 7, IV, 2174) and extending westerly through sections 20, 19 and 22 of that township, thence along the north section line of sections 21 and 20 to, and outletting into, the Twelve Mile creek as it flowed northwardly toward its confluence with the upper Mustinka. This ditch was about fourteen feet wide at the bottom and between thirty and forty feet wide at the top and had depth of from four to six feet (I, 596). In 1896 this ditch was extended westerly about a mile and a half and into section 20, township 128, range 44, (being the town of Gorton, Grant county, as shown on defendant's Ex. 7 (IV, 2174). It extended through what are called the Redpath Sloughs, which comprise sections 21, 22 and a part of 15 and 16, in township 128, range 45, (being the town of Redpath in Traverse county), it being expected that it would assist in the drainage of these sloughs as well as to carry away the drainage from the state swamp lands in Grant county.

The ditch was not a success. Instead of following the lines of the natural drainage it was cut

transversely across the flood plain, or directly east and west, and did not therefore serve as an outlet for the drainage as expected. It is abundantly shown by the testimony of the residents in that locality that this first section of the Mustinka state ditch had practically no effect upon the surface waters of the area through which it ran (Hawkinson, II, 709-710; Krenz, II, 967; Christophel, II, 1130, 1133, 1137, 1140; Hanson, III, 1185-1190).

(b) *Extension to First Mustinka State Ditch.* There has always been considerable flooding of the lands lying westerly of the main Mustinka, that is the Mustinka river below the confluence of the upper Mustinka and the Five and Twelve Mile creeks and after its turn to the southwest in section 11, township 128, range 46, this being the flood plain shown on the map (defendant's Ex. 4, IV, fol. 3583). Some of the residents on that area believed that the first section of the Mustinka ditch brought down larger quantities of water to the Twelve Mile creek and thereby increased the flooding in the main Mustinka flood plain.

The matter was laid before the legislature in 1909, and in 1911 the legislature enacted Chapter 138 of the laws of that year appropriating $35,000 for the use of the state drainage commission to provide a better outlet for the waters supposedly brought down by the first section of the ditch from the state swamp lands in Grant county. The construction of such outlet was committed in general

terms to the discretion of the state drainage commission, and pursuant thereto the state drainage commission, in the year 1912, let a contract for the construction of such an outlet upon plans prepared by the same witness Ralph who now appears in behalf of the state of North Dakota, but who was then state drainage engineer of Minnesota. The work was begun October 1, 1912, at the old outlet of the first section of the Mustinka state ditch, which is on the line between sections 19 and 18, in township 128, range 45, and was continued due west about two and one-half miles where it intersected the channel of the main Mustinka. The channel of the main Mustinka was then cleaned out and dug somewhat deeper and some of its convolutions cut off down to a point some four or five miles southwest of Wheaton, from which point in its natural condition the former Mustinka river formed the outlet. The ditch stopped at the influx of the Eighteen Mile creek (defendant's Ex. 2, IV, fol. 3581). The part of the ditch from Twelve Mile creek westerly to the main Mustinka, being about two and one-half miles in length, is called the cut-off, as it cuts off the detour of the Twelve Mile creek to the north and the place at which the Twelve Mile creek is joined by the upper Mustinka and Five Mile creek. In the fall of 1912 only about three-fourths of a mile of the cut-off was completed. Work was resumed in March, 1913, and in that year the ditch was completed to a point about half a mile below the line of the C.

M. & St. P. Railway. See defendant's Ex. 2, IV, fol. 3581; also I, 598.

In 1914 work was resumed about April 1, but continued only to July 29 when it was abandoned for lack of funds. It had then progressed to a point about three miles below the line of such railway.

In 1915 there was a further appropriation (Section 49, Chapter 378, Laws 1915) of $5,000 to complete the work.. It was resumed on July 3, 1915, and was finally completed on November 4, 1915, about two miles being built in 1915. The point of completion is about four and one-half miles below the railway bridge and about two miles from Traverse lake (I, 599).

The new section of the ditch did not operate to relieve conditions about the confluence of the several branches of the Mustinka river nor in the flood plain of the main Mustinka in times of flood; the cut-off or northerly portion being transversely across the flood plain failed to intercept the waters of Twelve Mile creek, and they continued on to the north. The overflow around the point of confluence of the various branches of the Mustinka river and in the Redpath sloughs, and the overflow on the flood plain of the main Mustinka was just as great after the construction of the entire ditch as before. In the summer of 1915 and in the spring and summer of 1916, and in the spring of 1917 the same flooding was experienced as in former years before the construction of any ditches. It was

worse in the springs of 1916 and 1917 than it was ever known to be before. (Heggen, II, 752-753; Hawkinson, II, 703-705; Krenz, II, 966; Newman II, 1004-1005; Wolk, II, 1024-1025; Hanson, III, 1188-1189; Christophel, II, 1137-1138; Ringdahl, II, 616-617.)

We have stated that the Mustinka state ditch did not operate as a flood control proposition. After the construction of the last portion, however, a large number of county ditches were constructed at various times into the Twelve Mile creek and into the enlarged river (defendant's Ex. 7). These ditches have been constructed at a cost of approximately $1,000,000, all whereof has been assessed against the farm lands benefitted thereby (II, 623). These ditches are serving for the drainage of surface waters in times of ordinary rainfall and are of very great benefit to the agricultural lands (II, 623-624). They have been constructed with reference to the depth and size of the enlarged river, and it is shown by the testimony that the restoration of the river to its natural condition would result in the destruction of the outlet of these ditches (I, 482-485). These ditches had been constructed in the years 1915, 1916 and 1917. Very few of them had been constructed at the time of the alleged floods in the Bois de Sioux valley in 1915 and 1916. More particular reference to the time of their construction will be made in the discussion of the testimony. Let it here be noted that the area in question, while subject to spring floods

and some flooding in extremely wet summer seasons, is all a well settled agricultural community, the farms being exceedingly valuable and fertile, well cultivated, excellent improvements, and that this condition existed long prior to the construction of any ditches upon the area.

6. THEORIES OF COMPLAINANT.

(a) *As evidenced by bill of complaint and testimony of witness Mr. Ralph.* The original theory of complainant, as disclosed by its bill is, in brief, that the moraine zone, so-called, easterly of the prairie zone comprised a large area from which the run-off was rapid; that this run-off reaching the prairie zone settled in a low area, which complainant has marked on its map, exhibit 1, in light blue, and designated as the delta zone; that this delta zone was some 75 square miles in extent and served as a detaining basin or reservoir for the waters of the moraine zone; that in this manner the waters accumulated on the delta zone to a considerable depth, rendering the lands either a marsh or a lake surface; that the construction of the first section of the Mustinka state ditch in 1894 and 1896 served to transfer these waters from the delta zone to the lower flood plain of the main Mustinka river, where a new or second detaining basin was formed along the flood plain of the main Mustinka, comprising about 8,000 acres in extent, in which the aforesaid waters were again accumulated and detained forming a flooded area; that the construc-

tion of the last portion of the Mustinka state ditch in 1912-1915 released these accumulated waters in the month of June, 1915, and conveyed such accumulation into Lake Traverse, raising the level of Lake Traverse about 5 feet above normal high water mark; that this resulted in the flooding of the lands in the Bois de Sioux valley, for the reason that the waters had no adequate outlet through the narrow, sluggish, channel of the Bois de Sioux river; that in the spring and summer of 1916, these accumulated waters were again transferred into Lake Traverse and again resulted in the overflow of lands in the Bois de Sioux valley. The theory was then projected that each recurring spring or time of high water the accumulated waters of the delta zone and of the lower detaining basin of the main Mustinka would be transferred into Lake Traverse, overflowing the lake and flooding the lands in the Bois the Sioux valley. Just how the accumulated waters of the delta zone and lower detaining basin, having been once transferred into the lake and the two alleged detaining basins destroyed could continue each recurring season to come down into the lake, notwithstanding that they had once passed away, is not satisfactorily explained in complainant's bill, evidence or brief.

Testimony of George A. Ralph.

To substantiate the theory outlined in the bill, one George A. Ralph, former engineer for the state drainage commission of Minnesota, and who was the author of the plans for the construction of the last portion of the Mustinka state ditch, was called as a witness for the complainant. It is the claim of defendant that Mr. Ralph was not employed by the state of North Dakota, but was employed and paid by the private land owners, who were interested solely in recovering a large amount of damages from the state of Minnesota through the medium of North Dakota. Upon this point we cite the following interesting portion of the record. (I, 399)

> Q. Now, when did you get into the employ of the state of North Dakota in collecting evidence, and data for the purpose of this action?
>
> A. I was engaged by the attorneys representing the state of North Dakota in the spring of 1916.
>
> * * *
>
> Q. Were you employed by the attorney general of the state of North Dakota?
>
> Mr. Boutelle: You needn't answer that question because you don't know. Witness is instructed by his counsel that he need not answer that question.
>
> The Commissioner: He is instructed to answer.
>
> A. I decline to answer on advice of counsel.

Q. Who is your counsel?

Mr. Boutelle: You need not answer that question.

The Commissioner: Same ruling. He may answer.

Mr. Boutelle: You may decline to answer on advice of counsel.

A. I decline to answer under advice of counsel.

Q. How much have you been paid by the state of North Dakota under your employment in collecting data, making maps and surveys and other work for the preparation of this case?

Mr. Boutelle: You may decline to answer under the advice of counsel.

A. I will decline to answer under advice of counsel.

Q. Have you ever been paid by the state of North Dakota one dollar for your services in connection with this case

Mr. Boutelle: You may decline to answer under advice of counsel.

A. I decline to answer.

Q. Why do you decline to answer those questions?

A. I have stated.

Q. Have you any reason to conceal the facts called for by these questions?

Mr. Boutelle: You need not answer that question. You may decline to answer on advice of counsel.

A. I decline to answer on advice of counsel.

The witness, after detailing what he had done in the way of becoming familiar with the area in-

volved, and in response to a hypothetical question calling for his opinion as to the cause of the floods in the Bois de Sioux valley in the summer of 1915 and the spring and summer of 1916, answered as follows:

> It is my opinion that the construction of the Mustinka state ditch, both the original and the extension, was the cause of the high stage of water in Lake Traverse in the years 1915 and 1916. Had the Mustinka river and the Mustinka watershed been in the condition that they were in a state of nature, that the water would not have reached a stage in Lake Traverse nearly as high as it did in the years 1915 and 1916 and fully one foot lower; that the construction of the Mustinka state ditch resulted in destroying the detaining basin found in the area described as the delta zone; it resulted in cutting off a large amount of flood waters that would naturally pass down the Rabbit river and in carrying the flood waters into Lake Traverse much more rapidly than they would have been carried in a state of nature. In a state of nature the waters coming down from the Mustinka watershed would pass over the detaining basin and a large part of them would remain there and evaporate and would at no time reach Lake Traverse; a large portion of the waters would pass down the Rabbit river basin in extreme flood periods; and that owing to the sinuous nature of the Mustinka river below the detaining basin and to the fact that the detaining basin was a large swampy area overgrown with rushs and aquatic grasses, that the water in a state of nature passed over the detain-

ing basin very slowly and down the channel of the Mustinka to Lake Traverse, and it is my best judgment that not more than one-half of the volume that reached Lake Traverse in 1915 and 1916 would have reached the lake had conditions been as nature made it. (I, 321)

* * *

Q. Now will you explain how the increased water stage in Lake Traverse causes or occasions the flooded conditions in the Bois de Sioux valley?

A. Lake Traverse is naturally an impounding reservoir and waters are impounded in the lake until they reach a stage naturally of 975 feet above the sea. The outlet from Lake Traverse is small. It has a shallow and narrow channel and is choked to a considerable extent with aquatic grasses. As a consequence the water escapes slowly from Lake Traverse and waters flowing in there accumulate and if the flood is a high flood the waters will raise in Lake Traverse to the high elevations recorded and gradually work down the Bois de Sioux river. When you raise them above 975 or 976 you throw a much greater volume of water over the valley of the Bois de Sioux, it also makes a much larger impounding reservoir of the lake. Of course this has an area of from 25 to 41 square miles. As a consequence it takes a much longer time for the waters to run off. Waters which would run off in a week or ten days under natural conditions might require two months under the changed conditions. (I, 322)

It is obvious that this opinion has for its foundation seven factors:

1. That there was upon that section of the prairie zone which the witness delineated upon the map, exhibit 1, and marked in light blue, a delta zone, or detaining basin, some 75 square miles in extent, which was a low swampy area overgrown with rushes and aquatic grasses.

2. That the construction of both the first and second sections of the Mustinka state ditch cut off a large amount of flood waters that would naturally pass over into the Rabbit river.

3. That the area of the delta zone was as delineated upon the map, exhibit 1.

4. That the area of the Mustinka watershed was 750 square miles, as he had previously stated in his testimony.

5. That the area of the watershed in North and South Dakota was as he had limited it upon the map, complainant's exhibit 1.

6. That the normal high stage of lake Traverse in a state of nature was 975 feet above the sea, and that the construction of the Mustinka state ditch raised this stage to 976.

7. That when the flood waters of Lake Traverse reached a stage of 976 the lands in the Bois de Sioux valley would be flooded.

1. As to the existence and character of the delta zone, which this witness assumed in forming his opinion and which he swore was the fact, we excerpt the following from his testimony (I, 322):

Q. How great an area of flooded land in this so-called delta zone did you take into consideration in answering the hypothetical question propounded to you?

A. From 60 to 75 square miles at extreme flood stage. I don't mean by that that entire area was flooded, but that the entire area was saturated or flooded.

* * *

(I, 376)

Q. Well, to such an extent that there were great quantities of water being accumulated there?

A. Yes, sir.

Q. If it is true that there was no such delta zone there, then that part of your theory fails, doesn't it, Mr. Ralph?

A. That is true; but I know it is not true.

Q. You know that there was 70 square miles of inundated and saturated land in the delta zone?

A. In a state of nature, yes, sir.

Q. When?

A. Prior to the construction of the Mustinka state ditch.

Q. Which year?

A. Prior to 1896.

Q. During what season of the year did this water accumulate upon this 70 square miles?

A. In the spring and summer.

Q. And to what depth did it accumulate upon those lands?

A. To a depth of two or three feet in spots.

Q. How large an area would be covered to a depth of two or three feet?

A. The surface is irregular and it would be hard to determine the area.

Q. What part of the 70 square miles in your best judgment

A. There was probably at least half of the 70 square miles that had water on the surface and the remaining half was saturated.

Q. Was this to such an extent that the lands were rendered worthless for agricultural purposes?

A. To a very large extent.

* * *

(I, 377)

Q. How much of the 70 square miles was not used for agricultural purposes prior to 1896 in your best judgment?

A. I would say that at least 60 per cent was not used in the ordinary wet years for any purpose, any agricultural purpose, the balance may have been used to some extent for hay lands.

Q. There is about 40 square miles that could not be used in ordinary wet years for any agricultural purposes whatever?

A. Yes, sir.

Q. Even for hay?

A. Yes, sir.

Q. And I suppose that for cultivation practically all of it could not be used prior to 1896?

A. That is true.

Q. There was none of it in a state of cultivation prior to 1896?

A. Not much of it, no, sir.

Q. No farm buildings there, no settlements?

A. Some around the edges.

Q. Around the edges of this delta zone?

A. Yes, sir.

Q. But the inside of the delta zone proper, there were no habitations of men there at all; they could not live there?

A. Not inside of it, not the wet portion.

* * *

(I, 378)

Q. Now after 1896, were these lands settled up then?

A. They were settled upon gradually as the country was ditched out.

Q. As the country was ditched out they were gradually settled upon and began to be cultivated subsequent to 1896?

A. Yes, sir.

The attention of the witness was then called to the various sections of land embraced within the so-called delta zone and he was asked whether there was any settlement thereon prior to 1896.

A. There was some settlement along the river you have mentioned—sections along Twelve Mile creek.

Q. There was some settlement along that creek? That would be on the west side of the sections?

A. Yes, sir; and there was some settlement along the road, but the lands were pretty generally overflowed.

Q. Well, people settled right there in the overflow, did they?

A. They settled on the high places? Yes, sir.

Q. Just on the tops of the hills?

A. On the knolls.

Q. They perched up on the knolls and the waters spread around them?

A. Yes, sir.

Q. They couldn't cultivate their lands of course in that overflowed condition?

A. They cultivated the higher lands, and in favorable seasons they cultivated the low lands. There wasn't much cultivation prior to 1896 nor much settlement.

Q. How many settlements—by which I mean farm buildings and people residing in them—were there prior to 1896 upon these sections that I have described, to your best judgment?

A. I couldn't state; possibly ten or twelve in there.

* * * (I, 377-378)

Also at I, 423:

Q. Then through the delta zone Twelve Mile creek did not overflow? How frequently did you have personal knowledge that the Five Mile overflowed in the delta zone?

A. It overflowed whenever the Mustinka overflowed. Every time it was high water and I have been in there the Five Mile creek was a lake for 4 or 5 miles at its lower end, its lower reaches.

Q. 4 or 5 miles from its confluence with the Mustinka the Five Mile was a lake?

A. Yes, sir.

Q. About how wide a lake?

A. It spread out as I have described, the delta zone. It was a watery waste along the Mustinka from a point about a mile west of the Great Northern track and down nearly as

far as Twelve Mile creek and along the Five Mile creek from the Herman road northward was generally wet and marshy.

Q. Had the appearance of a lake surface?

A. Had the appearance of a wet marsh.

Q. And I suppose in times of those overflows, particularly in the spring, it had the appearance of a lake surface?

A. Yes, sir, to some extent.

Q. Those conditions obtained also to the northward from where the Mustinka ran through clear up to the northern extremity of what you have marked the delta zone here?

A. Yes, sir.

On the part of the defendant a large number of old settlers were then called who had settled upon the lands in the alleged delta zone from 1879 to 1889 and who were still there occupying and cultivating their farms. We direct particular attention to the testimony of the following original settlers: Edward D. Rogers (II, 1082); Martin Monson (II, 1105); Emanuel Hawkinson (II, 698); Carl Krenz (II, 957); David J. Newman (II, 992); Frank Wolk (II, 1019).

These settlers all testified that prior to 1896, and in fact prior to 1890, the lands designated as the delta zone were taken up as homesteads, settled upon, cultivated each year and crops raised, excellent farm buildings erected, schoolhouses and churches built, good roads graded, and that it was in general a prosperous, well settled community. The tax books of the three townships affected, for the year 1895, were put in evidence, showing that

the area designated as delta zone, and described by Mr. Ralph as a lake surface, actually comprised 132 inhabited, highly cultivated, well improved and prosperous farms (I, 561-590, II, 1039-1048); that in the year 1895 there were just as many, and perhaps more, actual settlers upon this area than at the present time (I, 561-580); that in the year 1895 the largest crop of grain was grown upon this area that had ever been produced in its history (I, 562); that the town of Redpath, which is largely designated by Mr. Ralph as delta zone, cast in the year 1896 the largest vote known in its history (II, 993). It will be noted that this so-called delta zone embraced practically all of the township of Clifton, Traverse county, the easterly portion of the town of Logan, Grant county, practically all of the town of Redpath in Traverse county, and nearly all the southern half of the town of Tintah. (II, 1036; map, defendant's Ex. 7, IV, 2174 and IV, 2123-2124). It was shown by maps with 5 foot contour lines, in fact it is disclosed upon the map prepared by the witness Ralph himself, that the surface of the land through this delta zone is almost perfectly smooth, but having a slope to the northwest of between 5 and 6 feet to the mile with absolutely no raise in the land at its northwest border to detain surface waters in their northwesterly course; that the surface waters inevitably follow the natural slope of the land to the northwest and pass into the Rabbit river. The very map, complainant's Ex. 1, prepared by Mr. Ralph shows that the southerly rim of his so-called delta

zone has an elevation of 1045 feet; that its northerly boundary has an elevation of about 998 feet. See also map, defendant's Exhibit 4. (IV, fol. 3583) It is therefore manifest that to retain waters in the delta zone and for accumulation to extend to the southern limits thereof a retaining wall or dyke 47 feet in height would have to be built around the northerly boundary thereof. Instead of any obstruction whatsoever we find the land continuously falling toward the northwest until at the Rabbit river its elevation is only 970 feet. The government plats and surveys of the area in question were introduced in evidence and they show that there is not one foot of marsh or swamp land in the town of Clifton or in the town of Logan or in the town of Gorton (IV, 2123-2124; defendant's Ex. 112, 113, 114 and 115); that in the town of Redpath there is an area of marsh in and around sections 22, 23, 14 and 15 in that township comprising about 3½ or 4 square miles, commonly known as the Redpath sloughs; that in the town of Tintah there is an area comprising about 4 square miles in and around sections 19, 30 and 31, commonly called the Tintah slough. This Tintah slough is, however, outside of the limits of Mr. Ralph's delta zone. A survey of the physical conditions themselves shows the absolute impossibility that any such zone or detaining basin as detailed by Mr. Ralph upon the map, complainant's Exhibit 1, ever could have had any existence. Professor Bass examined the whole area thoroughly

and found it occupied by prosperous farmers. (II, 809-810) Professor Sardeson went over the area carefully and found no deposition of alluvial matter, except on a small area of the Redpath sloughs. No such area as the delta zone ever existed geologically or geographically. (II, 857-858)

2. Ralph assumed, and swore that it was a fact, that the construction of the Mustinka state ditch cut off and diverted into the Mustinka river large quantities of flood waters that would naturally have passed over into the Rabbit river, and that such diversion contributed materially to the floods in the Bois de Sioux valley in the summer of 1915 and the spring and summer of 1916. His cross-examination is as follows: (I, 323)

> Q. Now, what is the first year that you know of the waters overflowing from the Mustinka basin into the Rabbit basin?
>
> * * *
>
> A. The first year that I can remember was in the summer or spring of 1896.
>
> (This was subsequent to the construction of the first section of the Mustinka state ditch, which Mr. Ralph had just testified prevented the overflow of water into the Rabbit river.)

The witness was then asked to enumerate the different years when he had seen the flood waters overflowing into the Rabbit river and answered:

> A. To enumerate the different years I might say generally that fully two-thirds of the years since I became acquainted with the Rabbit river valley conditions have been such

that the waters would overflow and pass off by way of the Rabbit river.

* * * (I, 323)

Q. And you say to the best of your own personal knowledge that for at least two-thirds of the years since 1896 the waters had gone over at that point at least to some extent in the spring?

A. Yes, sir. (I, 326)

* * *

Q. So that the Rabbit river really had its source in the overflow from the Mustinka river?

A. The Rabbit river is really one of the outlets of the Mustinka river watershed. It might better be described, the Mustinka river, as having two outlets; one flowing northward and described as the Rabbit river, and the other flowing southward and described as the Mustinka.

Q. When did you first know of this locality at this particular point that you have been speaking of?

A. 1896 was the first time I got quite familiar with it.

Q. The year 1896. Were you there in the spring of the year?

A. I was there, yes, sir, in May and June.

Q. Was there a considerable volume of water going north at that time?

A. Yes, sir. (I, 327)

The witness having thus testified that after the construction of the first section of the Mustinka state ditch the overflow water continued to go north into the Rabbit river exactly the same as in a state of nature, that they so overflowed at least

two-thirds of the years from 1896 on, was asked about the year 1916, which as we have seen was after the full construction of the last section of the Mustinka state ditch. He testified as follows: (I, 325)

Q. Do I understand you to say that the waters went across into the Rabbit river at this point in the year 1916?

A. Yes, sir.

Q. And in such quantities that it washed out this dyke or excavation from this ditch?

A. Yes, sir.

Q. And then they put in a culvert and it washed that out?

A. Yes, sir. * * *

Q. And the first culvert that it took out, was that carried off some distance to the north with the rush of the waters?

A. I don't know how far it was carried. The waters were running through there very strong to a depth of 2½ feet, and a good strong flow.

Q. A width of how much?

A. 80 or 90 feet. (I, 326) * * *

Q. For how long a period in 1916 did the water continue to flow north in this channel that you speak of?

A. I couldn't say. It flowed north until—Oh quite a long time—I wouldn't be able to say just in days.

Q. It would be several weeks or a month—something like that?

A. Yes, sir. * * *

Q. What other years subsequent to 1896 did you observe quantities of water going over there?

A. I was there, I can remember very distinctly, in 1906 and 1907 and 1908 and there was water flowing over there each of those years. (I, 328.)

The witness was then asked his opinion from the observations he made as to water going over in the years in which he had not been there. His answer was:

A. The general condition was that that area from the Mustinka there, in all seasons that I have been there, had the appearance of either having overflowed or was overflowing at the time. (I, 329)

* * *

Q. If I understand it, those conditions would obtain probably every spring or two-thirds of them?

A. Yes, sir. (I, 331)

The witness was then asked whether easterly of the northern portion of the bend of the Mustinka river the waters had not flowed over the land to the northwest and reached the Rabbit river entirely independently of the flow in the Mustinka river. He was asked particularly about sections 13 and 14 in Redpath township and whether he had made any inquiry as to overflow in that locality. He answered:

A. The slope of the country is northwest and it is quite probable that the water would flow northwest in that locality.

He was then asked:

Q. Now, if it be true, Mr. Ralph, that the usual amount of water went over into the Rab-

bit river in the spring of 1916 at any or all the points I have mentioned here, that part of your theory would fail, wouldn't it?

A. If that were true. (I, 342)

It was then shown by the testimony of Mr. Teske, who lived at the point where the waters overflow from the Mustinka river into the Rabbit and had lived there for many years, (II, 727-729) and by Mr. Krenz (II, 969-971), David J. Newman, (II, 998-1000) and Frank Wolk (II, 1023-1028) that more water went over into the Rabbit river in the spring and summer of 1916 than had ever been known before in the history of that locality. It was also shown by the testimony of John H. Hanson (III, 1189) and C. H. Christophel (II, 1137-1138) that more water went over into the Rabbit river across the lands easterly of the confluence in the spring and summer of 1916 than had ever been known before.

Having made the admission that the water continued to overflow into the Rabbit river subsequent to the construction of the Mustinka state ditch, just as it did before Mr. Ralph attempted to account for the alleged diversion by claiming that there was a dyke constructed across the flood plain in the shape of a road formed by the earth excavated from county ditch No. 10 along the south line of sections 3, 4, 5 and 6 of Redpath township, and a smaller dyke, as he called it, in the shape of county ditch No. 9, along the south line of sections 11, 10, 9, 8 and 7 in that town. His testimony along this line is as follows: (I, 369)

Q. And it is that dyke and this culvert that prevents the water from passing over into the Rabbit river as it naturally would at a stage of 997?

A. The dyke, yes, sir.

* * *

Q. So that the water passed over at 997 under present conditions exactly as it did in a state of nature, except that not so great a quantity passes over on account of this dyke and culvert?

A. That is true.

Having thus accounted for the floods in the Bois de Sioux valley in June and July, 1915, by diversion of the waters of the Rabbit river by means of the alleged dykes formed by the construction of county ditches 9 and 10, considerable consternation was created in the ranks of complainant by the discovery that neither county ditch No. 9 nor county ditch No. 10 *were in existence* at the time of the floods in the Bois de Sioux valley in 1915. The construction of county ditch No. 10 was not begun until August, 1915, and the construction of county ditch No. 9 was not completed until the summer of 1916. (Teske, II, 729; Newman II, 1001; Ringdahl, II, 646.) Counsel for complainant, in their brief, do not explain how the diversion of water from the Rabbit river in 1915 by means of alleged dykes constructed by county ditches, could take place before the alleged obstructions were in existence.

The witness was asked at what stage of water at the confluence of the Mustinka and its branches, overflow would take place into the Rabbit river. He stated: "998". He was then asked at what stage the water would have to be in Lake Traverse. His answer was:

> My answer would be, if you had a stage of from 974 to 975 and that the conditions in the watershed were favorable to flooding, that is, there was a general precipitation over the watershed, and if a flood remained at 998 and above 998 at the confluence of the Mustinka and Rabbit rivers, that flooding would begin in the Bois de Sioux valley.
>
> Q. Then, how high does Lake Traverse have to be before there is any perceptible rise of the waters in the Bois de Sioux?
>
> A. It would have to be over 974 before were would be any flooding.
>
> Q. Well, 974 is its normal stage?
>
> A. Yes, it would be over 974, from that to 977, it would begin to flood by the time it reached 975 in the low places along the channel and when it reached a stage of 977 it would cover the valley generally.
>
> Q. And as I understand it, the mean average elevation of the water in Lake Traverse is 974?
>
> A. Yes, sir.
>
> Q. If it be true, Mr. Ralph, that the usual amount of water went over into the Rabbit river in the spring of 1917, then your theory that this ditch diverted and prevented it from going there fails, doesn't it?
>
> A. No, sir.

Q. The ditch prevented it from flowing, but it went just the same?

A. *I never said any ditch did prevent it from flowing.* * * * I would say if the usual amount for flood years went down the Rabbit that—and if the flood continued for a long enough period, there would have been a high stage in Lake Traverse and the Bois de Sioux valley would have been flooded under the present conditions. (Italics ours.)

Q. Then if it wasn't flooded your theory fails if those conditions existed, assuming that they did?

A. If they did exist the statement I made is true as to flooding.

Q. But if there was no flooding and those other conditions existed as you stated, then your theory is wrong; I ask you to assume—

A. Assume something that is impossible?

Q. Yes, assume what I stated here is the fact just the same as you assumed what your counsel stated was the fact.

A. I don't like to assume things that are absolutely impossible.

Q. It is absolutely impossible and could not have happened that any quantity of water went over into the Rabbit river at this confluence in 1917

A. Yes, sir.

Q. And if anybody saw it going there they saw something that did not exist?

A. Yes, sir, they had a vision. (I, 375-376)

The purpose of these questions was to show that the stage of 998 was reached by the water at the confluence of the Mustinka and its branches in the spring of 1917, and that it flowed over into the

Rabbit river for a period of from one week or ten days; that the waters of Lake Traverse were at a stage of 974 and yet there was no flooding whatever of the lands in the Bois de Sioux valley in the spring of 1917. To avoid the force of these incontestable facts, Mr. Ralph was obviously obliged to swear that no water went over into the Rabbit river in the spring of 1917. Defendant then called six of the most prominent citizens upon the area affected, and proved conclusively that in the spring of 1917 the water overflowed in great quantities into the Rabbit river at the confluence and such overflow continued from a week to ten days (Teske II, 733-734; Newman II, 1006; Krenz II, 970-971; Wold II, 1026; Hansen III, 1192; Christophel III, 1198). It was also proven, and not disputed, that the waters of Lake Traverse in the spring of 1917 were at their usual mesne elevation of 974, *but there was no flooding in the Bois de Sioux valley.* Upon his re-examination in rebuttal Mr. Ralph finally admitted that probably these witnesses had told the truth as to the overflow into the Rabbit in the spring of 1917, and instead of meeting the issue thus presented, he merely stated that he ascribed it to the excessive precipitation on the area in 1916 and the spring break-up of 1917. Neither he, nor the other experts produced by complainant attempted to explain why there was no flooding in the Bois de Sioux valley in the spring of 1917, if their theories were sound. As to the manner in which the stage of the water in Lake

Traverse in the spring of 1917 was established we will point out later in this discussion.

3. In order to sustain his position as to the extent of the delta zone and the overflow of the water into the Rabbit river, this witness in the first part of his cross-examination gave the following testimony:

> Q. And if the area in fact in the delta zone either saturated or flooded was less than 60 to 75 square miles, your opinion would be modified accordingly?
>
> A. It would be modified in this way, that a greater mass of the water would pass off by way of the Rabbit than otherwise would.
>
> * * * *
>
> Q. The smaller the delta zone, the greater would be the quantity overflowing into the Rabbit river?
>
> A. Yes, sir, if the flood condition is on, and by some means you had decreased the delta zone. (I, 322-323).

He then testified that the portion of the first section of the Mustinka ditch drained a large portion of the waters in the delta zone farther to the west and materially lessened its area. He was then asked: (I, 412)

> Q. I asked if it would have the effect of materially increasing the quantity which would go over into the Rabbit river?
>
> A. I don't think it would.
>
> Q. And you wouldn't say that a reduction in the size of the delta zone would materially

increase the quantity that would naturally go into the Rabbit river?

A. No, sir.

* * * * *

Q. Well, then, as I understand it, after the construction of this first section of the Mustinka ditch, the water did not continue to overflow into the Rabbit the same as it had before in a state of nature?

A. *Practically the same.* (Italics ours).

4. Mr. Ralph assumed, and swore that it was the fact, that the map exhibit 1 was correct and was made by him from actual personal surveys on the ground (I, 303). He assumed, and swore that it was the fact, that the drainage area tributary to the upper Mustinka and the Five Mile creek was 600 square miles and that the watershed of the Twelve Mile creek was much smaller than that of the upper Mustinka (I, 396).

His attention was then called to the Herman quadrangle, complainant's exhibit 3, and he was asked to state the elevation of the large ear shaped part of the moraine zone delineated in the upper right hand corner of his map (complainant's Ex. 1). He did this and discovered that in order to be tributary to the Mustinka river the waters in the large lake in that area called Upper Lightning lake would have to raise some 58 feet. Upon this discovery he admitted that some twenty or more square miles should be eliminated from the upper Mustinka drainage area and that this area was

probably tributary to the Rabbit river instead of to the Mustinka (I, 404-405-406.) This accounts for the difference of some twenty-four suare miles between his computation of the watershed and that of Professor Bass. As a matter of fact, the area tributary to the upper Mustinka and the Five Mile Creek is 203 square miles for the upper Mustinka and 121 for the Five Mile creek, making a total of 324 square miles instead of 600 as assumed by Mr. Ralph. The area tributary to the Twelve Mile creek is 364 square miles and it was obviously the purpose of Mr. Ralph to minimize that area for the reason that flowing directly north and with a strong heavy stream any overflow from the waters of Twelve Mile creek at the confluence would pass on to the northward into the Rabbit river.

5. Assuming as he did the correctness of his map he must have assumed the area of the watershed in North and South Dakota to be as shown thereon. As a matter of fact only about one-half of the actual watershed in North and South Dakota is shown upon his map. This fact certainly must be considered as affecting materially the weight of his opinion. See maps complainant's exhibits 6 and 7, IV, pages 2173 and 2174, and testimony of O. B. Nelson, II, 913-914.

6. Mr. Ralph assumed, and swore that it was the fact, that the construction of the first section of the Mustinka ditch transferred the waters of

the so-called delta zone farther westward and created along the flood plain of the main Mustinka river a new detaining basin; that this new detaining basin did not materially increase the flow of water into Lake Traverse for the reason that the waters remained there and flooded the lands (I, 313). It is obvious that he ascribed a large part of his answer to the hypothetical question to the destruction, as he called it, of this new detaining basin. The new detaining basin had been cut through and destroyed (if it ever existed) in 1913. There had been no flood in the Bois de Sioux valley in the spring of 1914 nor in the spring of 1915. To account for this absence of flooding and reconcile the facts with his theory, Mr. Ralph testified in this fashion on cross-examination:

> Q. Now, where was this new detaining basin which was created, as you say, after the construction of the first section of the ditch?
>
> A. It was from the railroad track up the Mustinka to and above the lower part of the new ditch near the cut-off. (This describes the flood plain of the main Mustinka river and the track referred to is the Milwaukee railroad track near Wheaton).
>
> Q. So that in the season of 1913, if they cut the ditch below the railway bridge, northwest of Wheaton, they cut clear through this new detaining basin which you have described?
>
> A. Yes, sir. (I, 355).

He testified that he was at this point in the spring of 1914.

Q. In the spring of 1914 were you down to Lake Traverse

A. Just passing by it.

Q. Was it any higher than usual?

A. *I don't recall that it was.* (Italics ours).

Q. Had the waters gone out of this detaining basin, the new one?

A. I couldn't say as to that, I think they had.

* * * *

Q. Did you see that Lake Traverse was any higher than ordinary in the spring of 1914?

A. No.

* * * *

Q. Were you over onto this Bois de Sioux valley in North Dakota?

A. I crossed it.

Q. Did you see any flooded conditions there?

A. No.

Q. Or any unusual rise in the waters of the Bois de Sioux river?

A. No, sir. (I, 357).

It should here be noted that in June of 1914 the heaviest rainfall occurred that was ever known in a single month upon that area, Mr. Ralph says something more than 12.53 inches at Morris (I, 366), and unusual rainfall continued throughout the balance of the season and during the fall of 1914. It is obvious that if Mr. Ralph's theory was correct there would certainly be floods in the Bois de Sioux valley in the spring of 1915. It therefore became necessary for him to retract his statement that the new detaining basin had been cut through in the summer of 1914. Also it was necessary for

him to account for the absence of floods in the Bois de Sioux valley in the spring of 1915, for after so abundant a rainfall and wet conditions as the season of 1914 there would necessarily be flooding in the Bois de Sioux valley if his theory was sound. He had stated on his direct examination that the ditch was completed in the early spring of 1915 (I, 316). This statement he later concedes was not true. The ditch in fact was not completed until November 4, 1915 (I, 599). His cross-examination (I, 359) was as follows:

> Q. Why did you state in your direct examination if you knew that fact, that this ditch was completed in the early spring of 1915?
>
> A. It was probably completed so far as its effect on Lake Traverse.
>
> Q. It was probably completed so far as its effect on Lake Traverse was concerned in 1914, wasn't it?
>
> A. No, sir.
>
> Q. They didn't cut through this detaining basin in 1914?
>
> A. No, sir.
>
> Q. They didn't do that at all?
>
> A. They hadn't cut through the lower rim of it.

A few minutes thereafter in the course of his cross-examination, Ralph gave directly the contrary testimony, to-wit:

> Q. They didn't get through this lower rim of this new detaining basin that you have talked about until after they had begun work in 1915?

A. 1914, until after they had begun work in 1914.

Q. Did they cut through the rim of this new detaining basin in the year 1914?

A. Yes, sir.

Q. They did?

A. Yes, sir.

Q. Letting the water down into Lake Traverse?

A. Yes, sir. (I, 361).

Again he contradicts his former testimony by this statement:

The Mustinka ditch, as I stated before, was probably completed insofar as its effect on Lake Traverse was concerned, in the fall of 1914 and the flood waters that would reach the point to where the ditch had been excavated in 1914 would escape into Lake Traverse almost as readily as they do now.

Q. And yet there was no flooding in the early spring of 1915?

A. Due undoubtedly to the fact that conditions were not favorable to flooding.

Q. In 1916 it is a fact that the flooding was due to the fact that conditions were favorable to flooding?

A. Yes, sir, partly.

Q. In 1917 what is the reason that those flooding conditions did not take place in the Bois de Sioux valley?

A. There was low water states.

Q. The conditions were not favorable to flooding again?

A. No, sir.

* * * *

Q. Unless the conditions are favorable there will not be in the future any flooding of this land along the Bois de Sioux valley?

A. *Not unless there is sufficient rainfall and sufficient run-off.* (Italics ours). (I, 363-364).

The utter unreliability of any opinion without a knowledge of the previous stage of the water in Lake Traverse is shown by Mr. Ralph himself in the following testimony: (I, 371)

Q. If under present conditions, which of course prevailed in the spring of 1917, the waters at and around this confluence attained a height of 998 there would be a considerable flooding of the lands in the Bois de Sioux valley, if it remained for a few days?

A. That would depend on the conditions of the watershed and depend on the duration of the flood at that stage as I stated before.

Q. Well, a duration of 5 or 10 days?

A. If it remained at a stage from 998 and above 998 for 10 days and the watershed was saturated as in the usual flood years, ordinary flood years, then there would be some flooding in the Bois de Sioux valley.

Q. The watershed would be saturated after a year like 1916, wouldn't it?

A. Yes, sir.

Q. And in order to pass over in any considerable quantities into the Rabbit river, the waters at and around this confluence in the spring of 1917 must have attained a height of 998 or upward?

A. Yes, sir.

Q. And that being a fact, Mr. Ralph, that a considerable quantity of water did pass into

the Rabbit river in the spring of 1917 and that continued, we will say, from a week to ten days, then there must have been necessarily a considerable flooding of the lands in the Bois de Sioux valley?

A. If the water was at a stage high enough to cast a considerable volume down the Rabbit river and if that flooding lasted for at least ten days, then would there be flooding in the Bois de Sioux valley?

Q. Yes, sir.

A. *To answer that question intelligently and properly, I would have to know what the stage of Lake Traverse was in the early spring of* 1917. (Italics ours).

Yet neither Mr. Ralph nor either of the other experts, Dean Shenehon and Professor Chandler, pretended to know anything about the stage of the water in Lake Traverse in the summer of 1915 and the spring and summer of 1916, prior to the floods, when they formed their opinion that the Mustinka state ditch was responsible for the floods of the Bois de Sioux valley. We submit that if, to answer the question properly and intelligently, as stated by Mr. Ralph, it was necessary to know the previous stage of water in Lake Traverse, then the vital hypothetical question in this case put to each of the experts has not been answered properly nor intelligently.

Mr. Ralph assumed, and swore that it was the fact, that the new cut-off ditch had a top width of some 75 feet, a depth of 12 feet and a velocity of 4.4 cubic feet per second (I, 314-315). As a matter

of fact, that ditch had an average top width of 43.83 feet and an average depth of 9.42 feet and for the first 1800 feet it ran uphill and for more than half of the balance of its distance had a very slight fall. (I, 603-604). (See profile of cut-off ditch, defendant's Ex. 31, IV, 2177).

In this connection we call attention to several mistatements in complainant's brief. At the lower portions of the new Mustinka ditch the surface of the ground was cut through at certain convolutions of the river. This made a cut of some 13 feet below the surface of the ground. Through inadvertence, no doubt, the statement is made at several places in complainant's brief, and is made in the bill of complaint, that the ditch itself was cut thirteen feet *below the bed of the old river*. As a matter of fact, the deepest cut below the bed of the old river was 6.3 feet and the average cut below such bed about 5.5 feet (II, 607). In order to bolster up his theory of acceleration of flow, Mr. Ralph stated that the natural channel of the old Mustinka river was two to two and one-half times as long as the ditch (I, 314). On cross-examination he was asked the distance from the juncture of the cut-off with the main Mustinka down to the outlet of the ditch. He stated that it was about 13 miles (which was correct). He was then asked: (I, 390)

> Q. How many miles do you think it was by the original course of the river from this juncture of the cut-off down to the outlet of the ditch?

A. I think it was about twice as far.
Q. It was twenty-six miles?
A. Yes, sir, I think so.
Q. That is your best judgment?
A. Yes, sir.

Accurate measurements were taken of the distance around the cut-off and it was conclusively shown that the new construction shortened the course of the river from the juncture of the cut-off to the outlet almost exactly three miles (II, 614; II, 1153). The distance around the loop, which was cut off by the so-called cut-off is approximately seven miles and the river below that sixteen miles, making a total of twenty-three miles. The length of the cut-off is two and one-half miles and the ditch below that thirteen miles, making a total of fifteen and one-half miles. It is, therefore, conclusively shown that the entire distance which the old river was shortened is seven and one-half miles. Mr. Ralph assumed the former length of the river at about forty miles. It is to be assumed that his opinion took into account these grossly erroneous figures.

A great deal is said in complainant's brief about the 8,000 acres mentioned in chapter 138, Laws of Minnesota 1911, as having been overflowed after the construction of the first section of the Mustinka ditch, and it is claimed that such recital is conclusive upon the State of Minnesota and that it must be assumed that the new detaining basin, described by Mr. Ralph as having been created in the main Mustinka flood plain, actually was so created

and existed. Mr. Ralph certainly did not consider such recital as binding upon him or upon the complainant, for he finally testified on cross-examination, in direct contradiction of his direct examination, that he did not believe the new detaining basin was created by the first section of the Mustinka state ditch but that the lands embraced within it had always been flooded long before the construction of the first Mustinka ditch. We call attention to his testimony upon rebuttal as follows:

> Q. You speak of the preamble to the legislative act in question having reference to a large number of acres of land flooded? (by the first section of the Mustinka state ditch).
>
> A. Yes, sir.
>
> Q. That had never been flooded before?
>
> A. Yes, sir.
>
> Q. Now, you think that those 8,000 acres that were flooded from the year 1898 on and had never been flooded before were lands in this delta zone?
>
> A. I think that those lands were flooded from 1898 on and that they had been flooded in all wet seasons for all time prior to 1898.
>
> Q. So you think that the statement in the preamble of the act that there was 8,000 acres flooded there that had never before been flooded is at variance with the facts?
>
> A. I think that the time is too limited, that the time it had been flooded extended prior to the passage of that act and prior to the construction of the state ditch and that it did not flood only after the construction of the state ditch.
>
> * * * *

Q. I say that the statement in the legislative act of 8,000 acres flooded from 1898 to 1911 that had never been flooded before is not correct?

A. I think the part that had never been flooded before is not correct.

Q. You think it had been even more flooded prior to the construction of the first Mustinka ditch?

A. Yes, sir, I think it had and the government plat shows it was flooded, it was surveyed in 1859 (IV, 2122-2123).

It thus appears that the second detaining basin rather than having been destroyed by the Mustinka state ditch was thus totally destroyed by Mr. Ralph in his own testimony. As a matter of fact, the same flooding along the flood plain of the main Mustinka existed precisely the same after the ditch construction as before. The "new detaining basin" had its birth as well as its burial in the imagination of Mr. Ralph.

A great deal is said in complainant's brief in ridicule of the theory that the first section of the Mustinka state ditch did not function when the flood waters were passing over it to the northwest. Mr. Ralph on this point testified as follows: (I, 349)

Q. You take a ditch in a territory and fill it full of water to the banks and there are flood waters all around it, a large area, and that ditch diverts the flow of those flood waters?

A. If it carries those waters off faster than they would go in a state of nature.

Q. I know, but so far as the direction they were going, if they were traveling northwesterly, as you say the land lies there, do you think that ditch would divert them and prevent them from going there after the ditch was constructed?

A. I didn't say it would, but I say it would transfer the waters from the zone down to the Mustinka river.

Q. *You didn't say it would prevent the natural flow of the flood waters after it was full?* (Italics ours)

A. No, sir.

In answering the hypothetical question, it appears that Mr. Ralph knew nothing about the carrying capacity of the first section of the Mustinka ditch and did not take it into consideration.

Q. What is the carrying capacity of the old section of the Mustinka ditch with the new part constructed?

A. It is hard to determine that because the ditch is in bad repair and it overflows.

Q. How long has it been that way?

A. Ever since it was constructed.

* * * *

Q. What is its carrying capacity to the best of your ability?

A. I don't know.

* * * *

Q. Did you ever measure the velocity of the water in it?

A. Not in that old ditch, no, sir.

Q. If you don't know the carrying capacity or the velocity of the flow of that old Mustinka ditch, Mr. Ralph, how do you base your opin-

ion upon it that it raised the waters of Lake Traverse a foot?

A. I didn't so state.

Q. You don't mean to so state?

A. I never stated so (I, 349-350).

In his answer to the hypothetical question Mr. Ralph states that he assumes that the new cut-off ditch had a depth of 12 feet and that it was flowing full clear to the top, and that it flowed for 10 days in the summer of 1915 and in the spring of 1916. He was not there in the summer of 1915 and knew absolutely nothing about whether the ditch flowed full or whether it flowed ten days. He was there one day in April, 1916, and saw it flowing full and simply assumes that it so flowed for ten days.

Much is said in complainant's brief about the assumption of Professor Bass that the bend of the old river opened up in the spring earlier than the cut-off ditch. Testimony of residents in that locality was directly to this effect, i. e., that the bend of the old river opened up from a week to ten days earlier than the cut-off ditch and that the cut-off ditch remained filled with ice and snow while the old river was flowing full (II, 736; II, 968-969). Professor Bass did not adopt this as a theory. He assumed the truth of the testimony given by the numerous witnesses who observed the fact itself.

Mr. Ralph assumed, and swore it was the fact, that the years 1915 and 1916 were years of ordi-

nary rainfall in that locality (I, 363). It was admitted by Dean Shenehon and Professor Chandler that they were two years of the greatest rainfall in that area and it is conclusively shown by the government records that the years 1914, 1915 and 1916 were three years of the heaviest precipitation ever known upon the area; the culmination being reached in 1916. (See defendant's exhibit 76, 2184).

7. Upon the point that the waters of Lake Traverse were raised by this ditch construction one foot, or any other distance above normal high water stage, we direct attention to the testimony of Daniel M. Tenney and James C. Tenney (II, 1066-1082). Daniel M. Tenney is a man seventy-three years of age, by trade a blacksmith, but homesteaded a farm on the easterly shore of Lake Traverse in 1877. He moved permanently upon the farm in February or March, 1881. This farm is in section 2 of township 125, range 48, and upon the shore of the permanent Traverse Lake. On the first day of May, 1881, the water of Lake Traverse reached a very high level. On the shore of the lake directly in front of Mr. Tenney's house is an enormous granite boulder presenting a smooth flat surface to the water's edge. Mr. Tenney, on May 1, 1881, selecting a time when the lake was perfectly calm and still, chiseled an arrow at the water's edge (II, 1069). The elevation of this high water mark was taken and

found to be 976.61 (II, 957). The water remained at this elevation about two weeks and then gradually went down through the summer (II, 1071). It is a remarkable circumstance that on the twelfth of April, 1916, the water of the lake reached exactly this high water mark of 976.61. It did not, however, remain at that mark more than three days (II, 1077), and then gradually went down. In the last of April or first of May in the year 1897 the lake was particularly high and reached a point six and one-half inches below the mark of 1881, which would be an elevation of 976. Again Mr. Tenney chiseled a mark on the rock at the water's edge. This is spoken of in the testimony as "Mark No. 2." The water remained at Mark No. 2 for about two weeks and then gradually went down. In each of these years the point to which the water finally fell through the summer was marked on the boulder and is designated as "Mark 3." This Mark 3 is twelve inches below Mark 2, or an elevation of 974, which is the normal level of the lake. Mr. James C. Tenney, a son of Daniel Tenney, and who has lived on the farm mentioned since his birth in 1882, states that in 1914 the lake was particularly high in the fall and froze up at a high stage of water; that the rise began in the latter part of June or the first of July, 1914, and that there was very heavy rainfall through the months of May, June and July of that year, greatly in excess of the ordinary, but he did not observe at what mark on the rock the waters were. In the summer of

1915, soon after June first, he observed that the lake was particularly high and ascertained and recorded with some care the mark reached by the water that summer. He says that it reached Mark 2 early in the summer, that is, the early part of June. This is the same height attained by the water in the spring of 1897, or a stage of 976. He says, however, that it remained there all summer because it rained all the rest of the summer, but it did not rise above Mark 2; that he observed particularly the rainfall beginning about May, 1915, and extending on through the summer. He states, however, that he believes that the lake froze up in the fall of 1914 at a high stage and that in the early spring of 1915 the water was unusually high. That after the stage of Mark 2, or 976, attained in June, 1915, it continued that way through the summer and froze up in the fall at about the same stage. In the spring of 1916, when the water came up to Mark No. 1, or a stage of 976.61, it remained there about three days, it then fell to Mark 2, which would be to a stage of 976; that it remained there through the summer of 1916 but fell late in the fall to Mark 3, or an elevation of 974, exactly the normal level of the lake; and that it froze up in the fall at that level. He did not observe any rise in the spring of 1917 and on June 1, 1917, the lake was at Mark 3, its normal level, or elevation of 974. It should here be noted that the spring of 1917 was one of exceptional flooding around the confluence of the various branches of the Mustinka

river, great quantities of water going over into the Rabbit river, and the flood plain of the Mustinka, described by Mr. Ralph as the new detaining basin, was flooded to practically the same extent as the spring of 1916. Yet the mesne level of Lake Traverse did not raise a particle in the spring of 1917 nor at any time during that season; neither was it raised a particle by this ditch construction in the early spring of 1915, though the lake had frozen up in the fall of 1914 at a high stage of water.

Mr. Ralph finally abandoned his theory of the new detaining basin and his theory that the entire Mustinka ditch construction prevented overflow of flood waters into the Rabbit river. The facts clearly establish that the Mustinka state ditch construction is of no value in controlling the flood waters at the confluence of the several branches of the Mustinka and that the same amount of water overflowed to the northwest into the Rabbit river both at the confluence and over the land easterly of the confluence. Mr. Ralph finally stated that the ditch construction transversely across the flood plain was wrong and that the ditch should have been constructed northwesterly and down the Rabbit river instead of the Mustinka. We quote from the record:

> Q. What is your knowledge or information as to the conditions there in 1915 in the summer flood? Was there water in this new detaining basin?
>
> A. There was a high stage of water but I don't know just what. I have no knowledge

now of just how much of the new detaining basin was overflowed. I couldn't say.

Q. And 1917; what do you know about it during that spring?

A. I didn't see water overflowing. I wasn't there when the spring waters were going off in 1917. I don't know what happened.

Q. Well, your assumption being that this ditch destroyed that new detaining basin, of course you assumed that there was no flooding there in 1915, 1916 and 1917.

A. *I didn't say it destroyed it.* (Italics ours).

Q. It is still there?

A. It helped some, the river is improved and straightened to some extent but it would take a much larger channel to take care of the flood waters.

Q. I thought you said the other day that this ditch was a success?

A. I said it was a success? I didn't say so.

* * * *

Q. It is a partial failure so far as relieving the flood conditions along this new detaining basin?

A. It isn't just as I would have planned it if I had had my own way about it. * * * If I had more money and had my own way about putting the ditch I would have put it down in the Rabbit river. * * * I was very much in favor of putting a proper ditch down the Rabbit river instead of carrying more water into Lake Traverse.

* * * *

Q. The ditch you say was only a partial success in taking care of the water in that detaining basin?

A. I say it didn't entirely prevent the overflow.

* * * *

Q. Do you think under present conditions the waters would be detained there just as long as they were before?

A. No, they would not but there would be much more water carried down there, so that the channel would have much more water to take care of than it would in a state of nature.

Q. And that might result in just as much flooding of those lands?

A. Yes, sir.

(Lands in the alleged new detaining basin). (I, 427-428-429).

At I, page 439, he testified:

A. I did not approve of the construction proposed. I was opposed to it and stated that a much better outlet could be secured down the Rabbit river. * * * I thought it was not the proper way to drain off the flood waters from the delta zone.

Mr. Ralph finally admits that there will be no flooding of the lands in the Bois de Sioux valley unless flood conditions cause them. At I, page 449, he testified:

Q. You have given your opinion as to the recurrence of these flood conditions. Why did they not recur in the month of April, 1917?

A. Why did they not recur? There wasn't sufficient water that run off from the watershed, was the reason.

It will thus be seen that one after another, every factor entering into Mr. Ralph's opinion was com-

pletely destroyed. His delta zone never had any existence; his assumption as to the drainage area of the upper Mustinka was entirely wrong; he knew nothing of the stage of water in Lake Traverse in either 1915 or 1916 prior to the time of the floods in the Bois de Sioux valley; his "new detaining basin" existed precisely the same after the ditch construction as before; the overflow into the Rabbit river took place after the ditch construction exactly as before; the flood stage of Lake Traverse was not raised a particle over what it had been in the years 1881 and 1897 without any ditch construction; the mesne level of Lake Traverse was not raised a particle but was at its normal stage in the spring of 1917; the dykes created by the county ditches, and to which he ascribed a large part of the flooding, had no existence in 1915 at the time of the floods; the cut-off ditch turned out to be very substantially smaller than he assumed it to be; the length of the old river was shortened by the ditch construction 7½ miles instead of twenty, and the rainfall in the years 1914, 1915 and 1916 were such as to fully account for the flooding in the Bois de Sioux valley. As to recurrence of the floods he finally admits that they will never occur again unless the conditions of flooding are favorable and the rainfall and run-off are exceptional.

We submit that the statement of this witness of his idea of the cause of the floods in the Bois de Sioux valley does not rise even to the dignity of an opinion and is the merest and wildest guess.

(b) *As evidenced by the testimony of Dean Shenehon and Professor Chandler.* Complainant's witness Mr. Ralph completely destroyed its original theory. Complainant by its two other experts then adopted an entirely new and different theory. This is the theory of the expert witnesses Dean Shenehon and Professor Chandler. As complainant seems to regard the testimony of Dean Shenehon as establishing the theory upon which it choses to rest its case, we will discuss his testimony in particular; this also because the testimony of Professor Chandler was along the same lines as that of Dean Shenehon. Dean Shenehon did not credit Mr. Ralph's theory of the delta zone being a swampy area either inundated or saturated and covered with rushes and aquatic grasses. He assumed that it was only an area of agricultural land some one hundred square miles in extent which needed artificial drainage. He admitted that it probably consisted largely of improved and cultivated farms, but contended that their value for agricultural purposes had been improved by the ditch construction. He attached no credit to Mr. Ralph's theory of a new detaining basin in the valley of the main Mustinka river. He did not take that into consideration (I, 504). He also completely discredited Mr. Ralph's theory of diversion of overflow from the Rabbit river, testifying that in his judgment there was under present conditions just as much overflow into the Rabbit river as there had

been in a state of nature. He found no evidence of any diversion of the natural overflow into the Rabbit river (I, 486; IV, 2082). He was of opinion that the entire system of ditch construction or "gridiron of ditches" constructed in Minnesota upon the Mustinka watershed had operated to raise the mesne level of the waters of Lake Traverse from three to six inches; that is, that the normal mesne level was 974 and that the ditch construction had probably raised that mesne level to 974.-33. He was of the opinion that this raising of the mesne level of Lake Traverse had impaired its value as a detaining basin, that is, as a flood control reservoir. He appears to be an expert upon legal as well as engineering matters and gave it as his legal opinion that the State of Minnesota should leave Lake Traverse in as nearly a dry condition as possible (I, 498), the same as the artificial flood basins created by engineers along the Miami river in Ohio, in order that if floods came by nature those floods might be accommodated by the low stage of Lake Traverse and would not therefore flood the lands in the Bois de Sioux valley. With great deference to the legal opinion of the learned Dean, we submit that Lake Traverse is a natural receptacle for waters from its watershed; that it is not an artificial detaining basin for flood control created by North and South Dakota for the purpose of preventing the flooding of lands in the Bois de Sioux valley. We submit that it being a natural water course or water receiving receptacle, the

State of Minnesota has the same right to discharge surface waters into it as has North Dakota and South Dakota. It is not contended that North Dakota and South Dakota are going to leave Lake Traverse at a low stage of water, and as nearly empty as possible, for the purpose of using it as an artificial reservoir for flood control. On the contrary, artificial drainage construction, as we have seen, is going forward upon the drainage area tributary to this lake and river with no regard whatsoever as to its effect upon the impairment of Lake Traverse as a detaining basin for flood control. These are going on and are to continue to go on while this court is asked to prohibit the State or Minnesota from maintaining any like construction on the easterly side of the lake and river. Yet in complainant's brief very much is said and authorities cited upon equality of right.

Dean Shenehon was of opinion that in flood times the run-off from the Mustinka watershed had been increased by the ditch construction about 50 per cent and that this 50 per cent accounted for the floods in the Bois de Sioux valley in the summer of 1915 and the spring and summer of 1916. He was of opinion that this 50 per cent increase in run-off in the flood times of 1915 and 1916 had raised the mesne level of Lake Traverse something like 10 inches. He did not express any opinion as to how much the run-off had been increased in years other than those of flood, but he thought the mesne level of the lake might possibly be raised

three to six inches; that is, that it might be raised from 974 to 974.33. He was of the opinion that it was not the Mustinka state ditch alone which had caused the floods of 1915 and 1916 in the Bois de Sioux valley but that it was the entire system of ditch construction upon the Mustinka watershed in Minnesota and that it was impossible to say what part was caused by the Mustinka state ditch and what part had been caused by the lateral local ditches. He was unable to say why the same conditions had not created a flood in the Bois de Sioux valley in the spring of 1915 or in the spring of 1917, this for the reason that he did not know the stage of water in Lake Traverse in those springs. Yet he did not pretend to know the stage of water in Lake Traverse in the summer of 1915 and in the spring and summer of 1916, upon which period he was forming an opinion. The opinion of the learned Dean is fallacious for the following reasons:

1. He assumed that all of the local ditches shown on the map, defendant's Ex. 7, were constructed and in operation at the time of the flood in the Bois de Sioux valley in the summer of 1915. The map shows some 28 or 30 of these ditches, and he took them all into consideration in forming his opinion. As a matter of fact, only three of these ditches, to-wit, county ditch No. 1, county ditch No. 2 and county ditch No. 4, were in existence in the summer of 1915 (I, 559; Defts. Ex. 7; IV, 2174). Complainant's whole theory and elabor-

ate argument, therefore, about a "gridiron of ditches" falls to the ground.

2. It was established that the mesne level of Lake Traverse in the fall of 1914 was much above the ordinary; it must have been at least 975 or 975.5 (II, 1076-1077); that it froze up at that time and was at substantially the same height in the spring of 1915. Identically the same ditch construction was in in the early spring of 1915 as in the summer of 1915; no work was done upon the Mustinka state ditch until after July 3, 1915. Yet there was no flooding of the lands in the Bois de Sioux valley in the spring of 1915. It is remarkable also that the crest of the flood in the summer of 1915 in the Bois de Sioux valley was reached on July 2nd; whereas no work was begun on the construction of the Mustinka state ditch that year until July 3rd. In the spring of 1917 when the ditch construction was complete and there was a severe condition of flooding of lands in Minnesota at the confluence of the Mustinka river and in the flood plain of the main Mustinka, there was absolutely no flooding of lands in the Bois de Sioux valley. The all sufficient answer to Dean Shenehon's contention is, that the ditch construction did not raise the mesne level of Lake Traverse and that in the spring of 1917, after the excessive precipitation of 1916 and with the watershed thoroughly saturated and floods on in the Mustinka watershed, Lake Traverse was at its normal level of 974 (II, 1079).

It did not rise even to the cherished figure of 974.33 of Dean Shenehon. Dean Shenehon himself found it at a level of only 973.86 in June, 1917 (I, 466). Later in the summer of 1917 the lake fell to 972.5 (II, 1079), as low as it was ever known to be in such a season. We apprehend that it was then in shape to control floods, as much so as though the ditch construction had never existed. It was also shown that the lake in the summer of 1917 fell as low as it was ever known to in a like season. (Testimony of John L. Larson; III, 1229).

3. The fact is that the normal flood stage of Lake Traverse was not raised by this ditch construction one particle above the normal, even in the extreme flood years of 1915 and 1916. In 1915 the lake attained an elevation of 976. It had attained that same elevation about May 1st, 1897 (II, 1075), and the same elevation on May 1st, 1907 (II, 784). The highest elevation reached in 1916 was 976.61 on April 12th; it had reached exactly that stage on May 1st, 1881 (II, 784).

4. Flood conditions existed upon the Mustinka watershed throughout the entire season of 1916; the water was not carried off by the ditch construction into Lake Traverse or anywhere else. The theory of Dean Shenehon that the ditches furnished an improved system of transportation for the water in times of flood was therefore completely disproved. Conversely, in the spring of

1917 there was severe flooding of the Mustinka watershed and no flooding whatever in the Bois de Sioux valley, as we have seen.

When asked why the lands of the Mustinka watershed, which it was claimed had been made dry by these ditches, were still flooded in 1915 and 1916, he testified that the rainfall in those years caused the overflow. (IV, 2080)

That the rainfall of 1915 and 1916 also caused the overflow of lands in the Bois de Sioux valley, which are only a few miles distant and upon the same drainage area, does not appear to have occurred to this witness.

In order that there may be no mistake as to the opinion of Dean Shenehon as to the amount of raise of Lake Traverse in 1916 caused, as claimed, by the ditches, we quote from his testimony:

> Q. Dean Shenehon, I find in the bill of complaint that the construction of this Mustinka state ditch resulted in raising the stage of the waters of Lake Traverse and the Bois de Sioux river approximately five feet above the normal level of high water mark. I don't know if I clearly understood your testimony and I would like to ask if it is to the effect that this entire ditch system resulted in 1916 in raising the waters of Lake Traverse about ten inches above the normal level of high water mark?
>
> A. That is my conclusion. (I, 493).

As to the amount of raise in ordinary times, he testified as follows (I, 466-467):

Q. What is the normal level of Lake Traverse; the normal mesne elevation of Lake Traverse, with the locality there in its natural state?

* * *

A. I should say 974 might be a very reasonable mesne.

Q. Now, to what elevation do you assume this ditching construction will lift that mesne elevation from 974?

A. Oh, from three to six inches. That is we will have a new mesne elevation in the future that might differ from three to six inches.

Q. Well, say, four inches as an average?

A. That might be a fair average.

Q. Well, what would that make it?

A. 974.33.

Professor Chandler also assumes the mesne level of Lake Traverse to be 974 (I, 514). He states that the Bois de Sioux river is a very inadequate channel for the outlet of the waters of Lake Traverse and in times of excessive precipitation must result in overflowing the surrounding lands (I, 516). He also considers Lake Traverse as an impounding or equalizing reservoir for floods (I, 519). Then, without stating that he has any knowledge of the number of ditch constructions in existence in 1915 and not pretending to have any knowledge as to the height of Lake Traverse in 1915 and 1916 prior to the floods, he states as his opinion that the flooding of the lands in the Bois de Sioux valley resulted from the construction of the Mustinka state ditch and the ditching con-

struction in the general area of it. As to recurrence of the floods, however, he states:

> *After sudden storms or in any extremely wet season* (italics ours) the quantity of flow and the height of the river will be greater, during parts of the season, than would have been the case in a state of nature, with the result that it will frequently happen that the river will overflow its banks and flood the surrounding lands, when this would not have occurred in a state of nature. (I, 520)

He then takes the U. S. Weather Bureau Stations surrounding the area, as shown on defendant's plat, exhibit 75 (IV, 2183) and states that in the five months in 1915 from May to September, inclusive, there was a rainfall upon the area of 20.6 inches (the average annual precipitation should not exceed 24 inches); that June 26th to 28th, 1915, there was a storm in which 2.3 inches was the precipitation; that in the month of June there was 7.4 inches; which was the highest thirty-day precipitation that he knew of upon that area; and that in the two months of June and July, 1915, the precipitation was 11.5 inches. He further states that in the month of June, 1914, the average rainfall from these combined stations was 10.4 inches. (I, 526) It should be borne in mind that so far as its effect upon Lake Traverse was concerned, the Mustinka state ditch was complete in 1914. Professor Chandler was asked: (I, 527)

> Q. With this ditch construction in existence and the precipitation in one month 10.4

inches there is bound to be flooding of lands in the Bois de Sioux valley?

A. Not necesarily, but a much better bet there will be.

Q. It would be a pretty safe bet, Professor Chandler?

A. Yes, sir, unless the soil was in such shape as to take up rainfall and hold it.

It was then shown by his testimony that in May, 1914, there was 3¼ inches of rainfall; that in April there was 3 inches; that in March there was 1½ inches; that in February there was ½ inch; that all of these precipitations were above normal and that in one storm, June 23rd to 27th, there was a precipitation of 4.4 inches. He then stated that the watershed would probably be saturated on June 1st; that the height of Lake Traverse was doubtless at its normal mesne level; that the concentration of precipitation in the month of June was sufficient to cause flood conditions, and that all these conditions were favorable to a flood. He was then asked: (I, 530)

Q. And the probabilities are that if all of those factors exist in the future and there will be a rainfall of 10.4 inches in one month, you are going to have flooding of the lands in the Bois de Sioux valley?

A. In most cases, usually, under such conditions.

* * *

Q. How much do you think would come in in the month if this ditch were there and you had a saturated watershed and a rainfall of 10.4 inches?

A. Three inches off the watershed.

Q. And that would raise the lake how much with the outflow that the Bois de Sioux permits?

A. At the High Bridge to a height of 967 or thereabouts.

Q. What would that do to the lands below or the lands in the Bois de Sioux valley?

A. Flood the lands.

* * *

Q. Substantially the same amount of flood that we had in 1916?

A. If three inches ran off the whole watershed in one month, it is.

Q. Now, Professor Chandler, if this ditch was there in June, 1914, and there wasn't any flooding of the lands in the Bois de Sioux valley, and there were these other conditions which you have assumed, Lake Traverse at its normal height, and the saturated watershed, your theory fails, doesn't it?

A. No theory for predicting weather is expected to hold in every case.

Q. I don't want you to predict weather; I want you to tell about predicting floods.

A. A flood is the result of the weather. Run-off is like weather in involving a great number of factors which cannot be measured, which haven't been entirely investigated and even in the case of the Weather Bureau with their predictions of storms, they are not always correct. Run-off is much more complex even than the prediction of rains and winds and storms and hot and cold weather.

Q. Then the truth is, the secret of the whole thing is, that your prediction of a recurrence of these floods is all guess-work, isn't it?

A. In the same way that the predictions of the Weather Bureau of cold waves coming are all guess-work.

Q. Well, if we had these conditions and had this ditch and there wasn't any flood, don't you care to consider that at all?

A. Yes, sir, that is the time when the Weather Bureau missed its guess, or the river flood predictor missed his guess.

Q. In other words, Professor Chandler missed his guess?

A. Yes, sir. (II, 531-532)

We think the foregoing sufficiently demonstrates the value of the opinion of these various experts as to recurrence of the floods in the Bois de Sioux valley. As to the overflow into the Rabbit river, Professor Chandler testified as follows:

Q. Do you attach any importance to this overflow into the Rabbit river, or rather lack of overflow, after the construction of the Mustinka ditch?

A. I did not attempt to estimate the exact amount of that. A small amount of overflow seemed probable and it seemed to me that in my opinion the construction of the ditch was a sufficient explanation of the flooding conditions without considering or attempting to determine whether there was or was not a change in the diversion into the Rabbit river.

Q. So you didn't take that into consideration at all?

A. No, that is a mere detail. (I, 540)

It may be remarked in passing that just in what manner these three experts reached the same con-

clusion, one assuming that great quantities of flood waters were diverted from the Rabbit river and carried down into Lake Traverse, and the other two assuming directly the contrary and that there were no waters diverted from the Rabbit river, is not attempted to be explained in complainant's brief. As to the drainage of lands on the Dakota side of the lake and river, Professor Chandler testified as follows: (I, 541)

> Q. In speaking of the possibility of recurrence of these flood conditions in the Bois de Sioux valley, do you take into account the probable construction of other ditches into this system?
>
> A. I haven't been considering them. I have been considering only present conditions.
>
> Q. There is a considerable area, I think something like 470 square miles of agricultural lands in North Dakota and South Dakota, that are naturally tributary to Lake Traverse and the Bois de Sioux river, the same as these lands in Minnesota are tributary thereto.
>
> A. Yes, sir.
>
> Q. And if those lands are to be drained the only natural and feasible outlet for the drainage of them is into Lake Traverse and the Bois de Sioux river.
>
> A. I presume so.
>
> Q. Did you make an examination to see whether there had been ditch construction into Lake Traverse and the Bois de Sioux river on the Dakota side?
>
> A. No, sir.
>
> Q. So in making up your opinion as to a recurrence of these flood conditions that have

already taken place you did not take into account any drainage from ditches in North Dakota and South Dakota?

A. No, sir.

* * *

Q. I suppose if they were drained in on the Dakota side they would simply add to this probability of overflow of the lands in the Bois de Sioux valley?

A. Yes, sir. (I, 542)

Professor Chandler also assumed that the lands on the Mustinka watershed in Minnesota were simply agricultural lands and in need of drainage; he did not assume any lake surface, aquatic grasses or watery waste. His testimony was as follows:

Q. With the settlement and improvement of the lands on the Minnesota side particularly, thus far has arisen this probability of overflow of the lands in the Bois de Sioux valley. Am I right?

A. With the improvement of the channel that was for the interests of the settlers and farmers there, yes, sir.

Q. On the Minnesota side?

A. Yes, sir.

Mr. Boutelle: What do you mean by the improvement of the channel?

A. The improving of the inadequate channel of the Mustinka river.

Mr. Palmer: Which was necessary for the drainage of the lands in Minnesota?

A. From the act of legislature of the year 1911 that has been introduced as one of the exhibits, I infer it was necessary.

Q. Independently of that, Professor Chandler, it was necessary that this improved channel of the Mustinka be put in and that these lateral ditches be put in, this ditch system be put in, if these lands on the Minnesota side were to be properly drained and improved?

A. Certainly. (I, 543)

The testimony of the two witnesses Shenehon and Chandler then amounts simply to this, that there is on the Minnesota side and in the Mustinka watershed some one hundred square miles of agricultural lands needing drainage and which cannot be properly drained, improved and cultivated without the artificial drainage there existing, that such artificial drainage has no other natural outlet than the Mustinka river, that the Mustinka river in a state of nature was wholly inadequate as such an outlet and has been made adequate by this rectification, that is, by the Mustinka state ditch construction, that no waters have been diverted from the Rabbit river, that this indispensible drainage construction has resulted in raising the mesne level of Lake Traverse .33 of a foot, which has impaired its capacity as an impounding reservoir for the control of floods, that is, that the mesne level has been raised so that if floods come the storage capacity of Lake Traverse will be impaired to extent raised; that this direct and indispensable improvement of one hundred square miles of agricultural lands in Minnesota and the indirect improvement of seven hundred fifty square miles has

taken place at the expense of a possible diminution in value and a possible recurrence of floods upon less than ten square miles of swampy, marshy and naturally overflowed land in North Dakota. (II, 949) We submit that if this entire contention be correct it does not entitle North Dakota to the relief here asked for, nor to any relief whatever.

The estimate of Professor Bass—In connection with the guess of complainant's experts with reference to the quantity of water cast into Lake Traverse in 1915 and 1916 directly attributable to the Minnesota drainage construction, we direct the court's attention to the estimate of Professor Bass.

Professor Frederick Bass, Professor of Hydraulic Engineering in the University of Minnesota, prepared the maps, charts and other data submitted by Minnesota; he spent twelve full days upon the area and had an expert engineer at work upon the area making surveys, maps and collecting other data for one hundred twenty days, from May 24, 1917, to October 4, 1917 (II, 910, 912). We will not refer in detail to the testimony of Professor Bass for the reason that a resume of his testimony appears in complainant's brief. We will later discuss his testimony more fully in regard to rainfall and runoff records, particularly in connection with the chart, Defendant's Exhibit 76. (IV, 2184) From certain facts Professor Bass formed his opinion as to the contribution which the ditch construction may have made to the rais-

ing of Lake Traverse in the summer of 1915 and the spring and summer of 1916. Gaugings or current measurements were made by the U. S. Geological Survey at the point where the main Mustinka river is crossed by the C. M. & St. P. railway near Wheaton; or rather they were made at the wagon bridge near the railway crossing, commonly known as the Heggen Bridge. These gaugings showed the quantity of the flow in the river at that point from June 7, 1916, up to the time of the trial, and were at such a point that the entire flow from the Mustinka watershed into Lake Traverse was accurately measured. Professor Bass found that in the summer of 1916 there were only 4 days when the flow exceeded the quantity of water which would have been carried by the former Mustinka river around its loop at the north under natural conditions and without the construction of any ditching operations. The capacity of the old river around the loop at the north in Sections 12, 13, 11 and 14 of the town of Monson (see map, Defendant's Exhibit 7, IV, 2174) was 1500 cubic feet per second. Professor Bass found that in the summer of 1916 there were only four days when the flow exceeded the capacity of the old river, to-wit: June 6, 1550 second feet; June 7, 1530 second feet; July 8, 1590 second feet; and July 9, 1550 second feet. He therefore concluded that this excess only could be ascribed to the cutoff ditch, and taking such excess he figured that it raised the level of Lake Traverse in the summer of 1916 three-eighths of an inch. He found that the precipita-

tion in the months of May, June and July, 1915, was practically the same as the precipitation for May, June and July, 1916. He therefore concluded that the contribution by the ditch to the raising of Lake Traverse in the summer flood of 1915 was three-eighths of an inch. He found that from November, 1915, to April, 1916, there was an increase of precipitation over the like period of 1916 to 1917 of twenty-five per cent. He estimated that this twenty-five per cent increase in precipitation would result in fifty per cent increase in run-off. Following the process by which he had figured the raise of three-eighths of an inch in Lake Traverse in the summer of 1915 by reason of the ditch, he found that in the spring of 1917 there were four days in which the flow exceeded the capacity of the old river around the loop, to-wit: March 30, 1597 cubic feet per second; April 1, 1820 cubic feet; April 2, 2230 cubic feet; and April 3, 1962 cubic feet. He computed that the excess over 1500 cubic feet per second, which must have been carried by the cutoff, would raise the level of Lake Traverse in that spring about two inches. For the spring of 1917 he allowed fifty per cent increase of run-off on account of the twenty-five per cent increase in precipitation from November to April, which therefore increased the amount of rise in Lake Traverse in the spring of 1916, due to the ditch, to about three inches. This would seem a logical and common-sense way of computing the contribution of the ditch to the raising of Lake

Traverse. There is no other possible method of mathematically computing it. It is made the subject of much ridicule in complainant's brief. Counsel for complainant considers the mere guess of Ralph, Shenahon and Chandler of much greater value. With this we do not agree.

Let it be noted that there is absolutely no proof in the record of any of the factors assumed in the hypothetical question put to Professor Bass on cross-examination at II, 843, and quoted with considerable emphasis on page 103 of complainant's brief. It is there assumed that the cut-off ditch carried 2500 second feet and that at the time of the floods it flowed full for ten days. The proof shows that the flow in both the cut-off and the original river around the loop exceeded 1500 second feet for four days only, and then not consecutively. Mr. Ralph assumed ten days' flow, but admitted that he was there only one day and that the other nine days he simply assumed. The quotation in complainant's brief of Professor Bass' testimony proves nothing whatever and counsel do not attempt to cite any facts in support of it.

Professor Bass had strong reason to assume that the old river around the loop carried the main part of the waters of the entire confluence at flood times. Twelve Mile creek is by far the dominant stream. It came in at the confluence with the cut-off with such force in the spring of 1917 as to nearly carry away the bridge north of the cut-off. (II, 796-836-847, and photographs, defendant's exhibits 96 and

97.) The slope of the old channel around the loop is 1½ feet to the mile and that of the cut-off ditch is only 2.1 feet to the mile. (II, 791) For these reasons Professor Bass logically concluded that the overflow to the north into the Rabbit river was not affected by the ditch construction but took place exactly as in a state of nature. (II, 848, and see also testimony of Professor Sardeson, II, 862)

7. Contention of Minnesota—Excessive Rainfall Caused Floods.

(a) *Testimony of Residents.* Before proceeding to a discussion of the actual figures as to precipitation during the years 1914, 1915 and 1916, we make the general statement that the record abundantly and conclusively shows that through the years 1914, 1915 and 1916 there was a constantly increasing precipitation; that the amount of rainfall in those three years, culminating in that of 1916, exceeded anything ever before known for any like period in the history of this area; that the excessive precipitation was general throughout the entire area. In fact this is admitted by the experts of the complainant, as well as by its lay witnesses on cross-examination. Professor Chandler (IV, 2101) testified:

> Q. Now, it appears here in testimony that more water stood upon this land in the delta zone during the years 1915 and 1916 than ever stood there before to the knowledge of anyone living in that locality, Professor Chandler, how do you account for that?

A. The cumulative excess rainfall for the years 1914, 1915 and 1916, I believe those are the dates that have been given in the defendant's exhibits, was some 16 inches or thereabouts; in other words, a succession of wet seasons.

We quote some of the testimony of the residents. Julius H. Teske, who lived in Traverse county upon the area affected since 1892, testified as follows (II, 735):

Q. What about your crops on your land there in 1916?

A. I didn't have much of any crop.

Q. Why?

A. It was too wet.

Q. What made it wet?

A. Some of it was overflowed and too much rain.

Q. How did the rain in that year, as you recollect it, compare with other years that you have been in Traverse county?

A. Well, there was so much water fell that nothing could grow.

Q. Did you ever have it as bad as that before?

A. No, sir, not that I know of.

Carl Krenz, who had lived on the area and close to the confluence of the several branches of the Mustinka since the year 1888, testified (II, 966):

Q. Tell me about the year 1916. What was done with it (the land) then?

A. It was farmed, but we didn't get much of a crop; you know it was too much rain.

Q. And the land wet?

A. Well, it should be wet if it rains a month in one end.

Q. Did it rain a month?

A. Only stopped a few hours toward evening and then in the night we got another rain.

Q. How did that compare with the other years you have been there?

A. Well, that is the worst year we have ever seen since I have been there.

Q. In what respect?

A. That much rain, wet.

Q. Water on the land?

A. Yes, there wasn't blank water only in the gulleys, the rest was pudding, soft.

Q. Was there any other year that you had water standing on the land in that way and the land soft as you did in 1916?

A. No.

Q. Never any other year was as bad as that?

A. No, I never seen it so bad and nobody else did. I inquired still from older settlers and they didn't see it.

Thomas Heggen, who lived on a farm not far from the C. M. & St. P. Railway bridge since 1889, and on whose farm the stream gauges were taken for 1916, hereinbefore referred to, testified as follows (II, 754):

Q. I want to ask you about the crop conditions in 1916, your crop in 1916. What can you say about that?

A. Well, I didn't have any crop.

Q. Why not

A. I couldn't seed it in. The fall of 1915, anyway at my farm, was so wet and rainy that I couldn't hardly get my grain threshed that

I raised in 1915, and in the opening of the spring of 1916, it was a lot of snow during the winter of 1915, and opening up it was a cold, rainy spring, and at the highest points of my land I couldn't get on to seed it. * * * The damage I had in 1915 was in harvest when the rain started, excessive rain started in, and kept me from getting my grain, part of it.

James C. Tenney, who had resided upon the east bank of Traverse lake since his birth in the year 1882, testified (II, 1075 to 1078):

Q. Will you state as near as you can, Mr. Tenney, the months in which you observed the rise of the lake in 1914?

A. In June, the latter part of June or the first of July, is when I noticed it.

Q. Did you notice particularly the amount of rainfall in the month of June, 1914?

A. Well, there was a lot of it in the month of June, also in the months of May, too, and July, if I remember right.

Q. What would you say as to the amount of rainfall in May, June and July, 1914, as compared with the ordinary?

A. It was greatly in excess of the ordinary.

* * *

Q. Now, in 1915, you say you observed it (the lake) particularly high?

A. Yes, sir.

Q. About what time in 1915?

A. It was the early part of the summer, it must have been along the first of June.

Q. When do you think was the highest water that season?

A. It didn't get any higher after it reached that point in June.

Q. Now, did you observe the point attained by the water in June, 1915, with reference to any one of these marks?

A. Yes, sir.

Q. You may state.

A. It reached mark two (stage 976) early in the summer I should say, as I said I think in June. I am not positive, but I think the early part of June.

* * *

Q. Now, in this season of 1915 how long did it remain up to this mark two?

A. Well, it remained there all summer because it rained all the rest of the summer.

* * *

Q. Did you observe particularly the rainfall beginning, say, about May, 1915, and extending on through the season?

A. Yes, sir.

Q. What would you say about that?

A. It was excessively heavy all through the summer.

* * *

Q. Did you observe particularly the rainfall through the season of 1916?

A. Yes, sir.

Q. How was it?

A. It was pretty heavy up until—I don't know just what month it did stop raining, but it was along after harvest.

Q. When do you usually harvest in that locality?

A. Oh, in August or September.

Q. How was the rainfall through that season, compared with the ordinary?

A. Excessive.

Q. How would your recollection compare it with the rainfall through 1915?

A. About the same, with the exception of the latter part of 1916.

Q. And through the latter part of 1916 would you say it was as heavy as through the latter part of 1915?

A. No, I believe not.

Q. Within your recollection how did the rainfall of 1914, 1915 and 1916 compare with any other years that you had known there?

A. They were greatly in excess of any other years that I know anything about.

Q. You mean in the matter of rainfall?

A. Yes, sir.

Martin Monson, who lived in the town of Clifton and on what Mr. Ralph called the delta zone since 1884, testified as follows (II, 1107-1108):

Q. Were you troubled any with water in the year 1915?

A. Yes, sir, it was pretty wet.

Q. How was it in 1914?

A. It was wet in the fall that year. That is it rained a lot, but we plowed. Got all the plowing done.

Q. Were you able to plow in the fall of 1915?

A. No, sir.

Q. Why?

A. Too wet, rained all the time.

Q. Describe the conditions of the land and the lands around there in that vicinity generally through 1916, as to water.

A. Well, it was all wet; it rained all the time, and you couldn't get out in the fields.

Simply wet, that's all. In 1915 I know there was 6 inches of waterfall the first of October.

Q. How did the year 1916 compare with all the other years you have been there, as to rainfall?

A. More than I have ever seen it. Never seen so much rainfall all the time I have been there.

* * *

Q. What was the next worst year before 1916?

A. Well, 1915 was pretty bad, next thing to it that I can remember.

Q. That is in respect to rainfall?

A. Yes, sir.

* * *

Q. Take those three years, 1914, 1915 and 1916, and compare them with any prior period that you had known in that neighborhood; what would you say?

A. Well, I should say it is the worst I have ever seen it; never seen anything like that before.

Edward D. Rogers, who lived practically in the center of the so-called delta zone ever since the year 1879, testified (II, 1083):

Q. What years do you recollect as being wet years in any particular?

A. 1881 was a very wet year in the spring but we put our crops in. 1897 I think was one wet year in harvest time.

* * *

Q. Do you recall any other years?

A. Last year, 1916, was wet. 1915 and 14 were also wet, 1914, 15 and 16 were unusually wet.

Q. How did the year 1914 as to being wet compare with the other years that you have known there?

A. Well, I think there was a little more rain perhaps than most of the years.

* * *

Q. Now, 1915 you describe as a wet year. How does that compare with the other years since you have been there?

A. Rather wet.

* * *

Q. What was the trouble in 1915 with the crop?

A. It rained too much.

* * *

Q. And in 1916. What can you say of that?

A. Well, we had no way of knowing how much water fell, but we thought it was the wettest season we ever saw there.

Q. And you think it was the wettest season you ever saw since you came to the country?

A. I do, yes, sir.

Wilder E. Bruce, who had lived on a farm north of Wheaton and close to the Bois de Sioux river on the Minnesota side since the year 1880, testified (IV, 1997):

Q. The year 1915 will you describe the conditions as to rainfall, according to your best recollection?

A. I will.

Q. Begin with 1914.

A. 1914 commenced to rain in June, I think, and we had lots of rain in June and July; and then in 1915 it commenced to rain, —well, all the seeding wasn't done,—it com-

menced to rain and, for the times, the years I have been there, there has never been any season to compare with it, with the amount of rainfall that fall. * * * The next spring, 1916, we put in our crops. * * * I cut my wheat and threshed on an average about seven bushels to the acre.

Q. What was the trouble in 1916?

A. Wet. You dig down anywhere on that high land a foot and you would strike water.

Q. What do you recall about the rainfall that season?

A. The rainfall in 1915 and 1916 I have never seen anything to compare with it.

Wallace J. Taylor, a witness for the complainant living at Fairmount, North Dakota, who owned land in the Bois de Sioux valley and who had resided in the vicinity since 1882, testified (I, 268-269):

Q. Now, in 1916, you had lots of water there?

A. Certainly did.

Q. And in 1916 you had the most rain you ever had in the history of that locality there, did you not?

A. I think we had as much probably and a little more.

* * *

Q. Now, you say that in 1881 the water was as high as it was in 1916?

A. Just about, I think.

Q. That year you had the greatest amount of precipitation on record in the matter of snowfall?

A. You mean in the winter of '80 and '81?

Q. Yes.

A. Very likely, I think it was.

Q. I understood that is what you said.

A. Yes, I think it is the deepest snow I ever witnessed.

Q. And in 1916 you had the greatest amount of rainfall you ever experienced in that vicinity?

A. Well, we had as much.

Q. And you think more?

A. Well, I would not be surprised if it was a little more but I don't know that we had more.

C. H. Christopel, who had lived on the so-called delta zone since 1899, testified (II, 1140):

Q. What was the trouble on your home farm that you didn't have but half a crop in 1915?

A. Too much, excessive rains.

Q. Go back to 1914.

A. 1914 we had a reasonable good spring. We had our plowing done the fall before and we got our crop all in in good shape and the spring come on good. Then we had the rains come on in about June again. It hurt the crop considerable, and then we had it wet again, along in June and July we had it wet up until harvest time. The one quarter we had rented southwest of us, we couldn't only cut the high places on account of there being so many dips in this creek and we had to get around those dips, leaving all the low lands, as we couldn't get through with the harvester, water standing in places.

Q. After these excessive rains in June, 1914, did you have some overflow of the river?

A. Yes, sir, we had overflows in that year.

Q. From the river to the northwest?

A. Yes, sir.

Q. But not so marked as in 1915?

A. Not so continuously.

Q. This overflow passing to the northwest as you described in the other years?

A. To the northwest.

Q. Since you have been there from 1889 on, how did those three years, 1914, 1915 and 1916 compare with any other years that you knew there, Mr. Christophel?

A. It didn't seem to be any difference between 1899 and 1900, and as to 1915 and 1916, I think there was a longer wet spell in 1916, more continuous rains than there was in those former years.

Q. And 1915—

A. Yes, sir.

Q. Was there more continuous rains than in any previous years you had known?

A. Yes, sir.

William Ringdahl, who had lived in Traverse county since 1893, who had been a grain buyer at Norcross until 1901, afterwards living at Wheaton, owned several farms in the so-called delta zone, and had been a county commissioner of Traverse county for many years, testified as follows: (I, 584)

A. We had considerable rainfall through the fall of 1914, and in the spring of 1915 it started to rain again and kept on, I would say, through the entire summer season of 1915 above the average—a great deal above the average, and then in the fall and winter of 1915 and 1916 we had considerable snow.

Q. Above the average would you say?

A. I would say about the average.

Q. In the spring of 1916 it started to rain again?

A. Yes, sir, and it kept on raining, I don't know just how many days. During the months of April, May and June it rained, but the biggest portion of it was there one month that I think it rained in Wheaton twenty-six days. That is, it rained off and on during that time, and the consequence was that everything was drowned out. We didn't get any crop in 1916.

Q. I will ask you how that year of 1916 compared with other years as to rainfall during the time of your residence in that locality?

A. You mean those three years?

Q. Yes.

A. They were abnormal. I never saw anything like it.

Q. That is 1914, 1915 and 1916?

A. Yes, sir, those three years.

Q. And as to the state of water on the land in Traverse county, generally, and the surrounding territory throughout the season of 1916 compared with other years?

A. It was soaked clear down to the subsoil so it was nothing but mush, the whole thing.

Q. Had you ever had, during your knowledge of that country, any such experience before?

A. Never.

Q. Or any condition approaching that of 1916?

A. Not that I can remember.

Q. Now, was that condition confined to this delta area, Mr. Ringdahl?

A. Not only to the delta zone, but to the entire Traverse county.

Q. And take the adjoining counties—Wilkin county?

A. Same thing up there.

Q. Grant county?

A. Same thing there.

Q. Stevens county?

A. I never was down into Stevens county those years, but Bigstone county was the same. I was in Bigstone county.

Q. Were you down around Donnelly and those places?

A. No, but I was at Clifton and Ortonville and Graceville.

Q. What did you find the conditions there that year?

A. Very wet.

Q. As wet as Traverse county or this delta zone?

A. Yes, they didn't get any crop to speak of. Once in a while a farmer got a few patches of grain and some of them got a little corn.

Q. What lands were those?

A. They were on higher lands.

Q. Now, take over in North and South Dakota, the region adjacent to your territory. Do you know the condition of the crops there in 1916?

A. They didn't get much of a crop.

(b) *Expert testimony and documentary evidence.* In connection with the testimony of Professor Bass concerning precipitation, we refer the court particularly to defendant's exhibit 75 (IV, 2183); defendant's exhibit 76 (IV, 2184); and de-

fendant's exhibit 77 (IV, 2185); and excerpt the following from his testimony regarding them: (II, 811)

Q. In making your compilation of the precipitation records upon the area tributary to Lake Traverse and the Bois de Sioux river, what stations did you use?

A. * * * Milbank, Milnor, Sisseton, Forman, Power, Ashby, Alexandria, Beardsley, Fergus Falls, Morris, Wahpeton, Campbell, Kidder, Roslyn, Wheaton and Britton.

Q. What is defendant's exhibit 75?

A. A map of the drainage area of Lake Traverse and the Bois de Sioux valley to Fairmount, showing the U. S. Weather Bureau station where precipitation records were obtainable between the years 1893-4 to the present time.

Q. What is defendant's exhibit 76?

A. A chart showing the monthly and annual precipitation in the drainage area of the Red River valley tributary at Moorehead-Fargo, compiled from the records of the U. S. Weather Bureau, and the run-off from the drainage area of the Red River at the same places compiled from the records of the U. S. Geological Survey.

Q. Why did you take the station Moorehead-Fargo?

A. I prepared this chart for the purpose of showing that the flood of 1916 was common to the whole upper end of the Red River valley. Moorehead and Fargo are stationed on the banks of the Red River of the North about sixty miles north of Fairmount, North Dakota, and down stream from this portion of the Bois

de Sioux under consideration in this case. This chart shows a comparison of the rainfall in the years which are particularly under consideration in this case as compared with previous years, showing an increasing rainfall above the average 1914, 1915, and culminating in 1916, and it also shows the corresponding run-off in the Upper Red River valley, indicating a higher run-off in the year 1916 than at any period preceding this period during the years 1902 to 1916.

Q. What is defendant's exhibit 77?

A. A diagram showing the total precipitation on the Lake Traverse drainage area from November, 1913, to October, 1916, inclusive, showing the average precipitation as determined from the stations before mentioned during the years 1893-4 to the present time, and the actual precipitation during the years mentioned, November, 1913, to October, 1916. The chart shows the gradually increasing excess precipitation in these years, 1914, 1915 and 1916.

Q. And what indicates particularly the increasing excess precipitation through 1914, 1915 and 1916?

A. The vertical distance between the full line and the dotted line shows the excess in each of these periods.

As to the cause of the floods, from a thorough knowledge of the area itself and from the study of government records, maps and data, we submit that Professor Bass was peculiarly qualified to form a sound conclusion. He testified as follows: (II, 812)

Q. You have heard the testimony here, Professor Bass, respecting this flooding of lands in the Bois de Sioux valley in the summer of 1915 and the spring and summer of 1916, the extent and duration of those floods. Now from your examination and study of this entire area and the precipitation, run-off, flow of the water into Lake Traverse, and all those other matters respecting which you have testified, are you able to form an opinion as to the cause of those conditions in the Bois de Sioux valley in 1915 and 1916?

A. Yes, sir.

Q. What is your opinion?

A. My opinion is that these floods were caused almost entirely by the heavy precipitation in the years 1914, 1915 and 1916, which was considerable above the average, as has been shown, and to some extent by the obstructions across the flood plain of the Bois de Sioux valley, and possibly to a very slight extent, not more than two or three inches rise in Lake Traverse for a very short period of time, by the construction of the Mustinka state ditch and the ditching operations in the drainage area tributary to Lake Traverse in South Dakota.

Q. From your examination and study of this drainage area and the records of precipitation and all these other facts to which you have testified, are you able to form an opinion as to the recurrence of these conditions in the Bois de Sioux valley?

A. I find that in the years 1893-4 to 1916 and 1917 there were three series of years which with noticeably high precipitations occur approximately ten years apart. One of them is

> the period 1895, 1896 and 1897; another is the period of 1903, 1904, 1905 and 1906; a third is 1914, 1915 and 1916. The first mentioned of these did not appear to be nearly as great as the last two mentioned, so I judge that the periods of floods in this area from these records of the past might occur once in from ten to twenty years.

Minnesota seriously and earnestly contends that the complained of floods in 1915 and 1916 on the Dakota area in question were entirely due to a natural cause, to-wit, excessive precipitation, and that floods would have occurred during those years by reason of such excessive precipitation notwithstanding the drainage construction complained of, the same as they did in prior years of excessive precipitation, namely, 1881, 1888, 1897 and 1907.

Defendant's system of ditches does not operate to the injury of North Dakota lands during periods of normal precipitation and run-off. This is conceded by complainant's expert witness, Dean Shenehon, upon whose testimony complainant largely relies. The most that can be contended by complainant, in view of the testimony of this witness, is that Minnesota's system of ditches has had the effect in its operation of raising the mesne elevation of Lake Traverse, so that during a period of excessive precipitation and run-off the lake's capacity as a retaining basin for flood control is impaired to the extent to which its mesne elevation has been raised, namely, from three to six inches; and, by reason of this impairment, when a flood comes it will spread over a larger area of North Dakota lands than it would were it not for this system of ditches. But conceding for the sake of argument that Dean Shenehon's contention is supported by the facts, we submit that the injury to complainant's lands is not of such a character as to entitle it to relief from Minnesota.

Mnnesota is draining lands situated in the Mustinka watershed of surface water by means of the system of ditches complained of. Through this system the surface water is discharged into Lake Traverse and from thence into the Bois de Sioux. The question presented is: What are the respective rights and obligations of the states involved

with respect to the draining by Minnesota of surface water into a natural water course, the same constituting the boundary line beween these states?

Drainage of Surface Water.

We will proceed with a consideration of rules of law relative to the drainage of surface water into a natural water course as adopted by the courts of various jurisdictions, including those of the states of North Dakota and Minnesota. It will be seen, we think, without doubt that under none of these rules is complainant entitled to relief in this action.

(a) *The common law*—If the common law rule as to surface water is applicable, we contend that Minnesota has a right to rid its lands of surface water even though in so doing injury may result to the lands of a neighboring state. The rule has been announced so frequently by the courts of so many jurisdictions that a recital thereof seems uncalled for. The gist of the rule is that no legal right of any kind can be claimed *jure naturae* in the flow of surface water so that neither its detention, diversion nor repulsion is an actionable injury even though damage ensue. Walker v. New Mexico and Southern Pacific Ry. Co., 165 U. S. 593; Bowlsby v. Speer, 31 N. J. Law 351; Baltzeger v. Carolina Midland R. R. Co., 54 S. C. 242; Hoyt v. Hudson,

27 Wis. 656. Under this rule North Dakota cannot be heard to complain, although lands within its borders are injured by reason of the drainage of surface water by Minnesota. Minnesota relieves its lands of the common enemy—surface water—and if it is cast upon the lands of complainant, it is for complainant to get rid of it as best it can.

(b) *The North Dakota doctrine*—The supreme court of North Dakota in the recent case of Soules v. N. P. Ry. Co., 34 N. D. 7, involving a state of facts different from that here presented, said:

> "In North Dakota we have not as yet committed ourselves to either rule (common law rule or civil law rule) as a choice has not yet been necesary in any of the cases argued, and the court has naturally hesitated in foreclosing a question whose determination should depend upon considerations of public expediency and necessity, and be considered in the light of the peculiar topography and climatic conditions of the state, and to whose wise solutions every day brings more light and the results of a large body of accumulated experience."

In a later case, however, McHenry County v. Brady, 37 N. D. 59, involving a dispute as to the right of a drainage commission of North Dakota to drain the surface water of its district into a natural drain way, the court said:

> "All we have before us is a case where the drainage commissioners are seeking to dispose of the surface waters of their district. The Mouse or Souris river is a natural drainway,

> even though not a navigable river. Under the laws of both Canada and of North Dakota the upper riparian owners have the right to make use of it as a drainway, and it is beyond the power of the lower riparian owners to prevent or obstruct the flow to the detriment of the upper or superior lands or territory. See Soules v. N. P. Ry. Co., 34 N. D. 7, L. R. A. 1917A, 501; 157 N. W. 823. If the commissioners had stopped their work at the border, we hardly believe that any of the residents of Canada or any of its municipalities would have had any ground for complaint, *even though the flooding of their land would have been the result.*" (Italics ours.)

Under this doctrine surface water may be cast into a natural water course or drain way, even though by so doing the flow is so accelerated as to cause the flooding of lands lower down, and the owner of such lands has no right of action.

Applying this doctrine to the facts in this case, we submit that neither North Dakota nor her citizens have cause for complaint by reason of injury to their lands occasioned as claimed by the Minnesota drainage system. Under this doctrine a citizen or municipality or drainage commission of North Dakota may drain surface water into a natural channel or drain way to the boundary line of the state and need not at that point make any provision for the disposition of such water, and the citizens and municipalities beyond the boundary line have no cause of action even though their lands may be flooded. In this case, Minnesota is

doing no more than that which the North Dakota court says can be legally done, namely, transporting surface water to and into a natural water course, and under the North Dakota doctrine, neither North Dakota nor her citizens have a cause of action against Minnesota, even though the surface water cast into the natural water course causes the overflow thereof resulting in the flooding of their lands.

North Dakota in adopting this rule seems to have followed the courts of other jurisdictions. It has been held that one may lawfully drain his lands into a natural water course even though a lower proprietor is injured by the increased flow.

An early case in support of this doctrine is found in Williams v. Gale (Md.) 3 H. & Johnson's Reports 231. The court's short decision is as follows:

> "Where a natural water course runs through the lands of A and B, and A had, by cutting ditches on his own land, contiguous to the water course, increased the quantity of water which run down the course to the injury of B's land, by overflowing the part adjoining the water course—Held, that B had no right to erect a bank on his own land, across the water course, to stop or obstruct the course, in order to prevent such injury, and thereby overflow and damage the land of A."

In Miller v. Laubach, 47 Pa. State 154, the court said:

"No doubt the owner of land through which a stream flows, may increase the volume of water by draining into it, without any liability to damages by a lower owner. He must abide the contingency of increase or diminution of the flow in the channel of the stream, because the upper owner has the right to all the advantages of drainage or irrgiation reasonably used as the stream may give him."

In Foot v. Bronson, 4 Lansing 47, 51, we find the rule tersely stated in these words:

"And this court has recently held, in a case not yet fully reported, that the owner of low, swampy lands may lawfully drain them, by means of ditches, into a natural water course, and that the riparian owners on the stream below can have no action for damages by reason of the volume of water being increased by spring thaws or rains, or decreased and failing at an earlier period than formerly, in consequence of such drainage. (Waffle v. N. Y. Central R. R. Co., 58 Barb. 413.)"

In Fenton & Thompson R. R. Co. v. Adams, 221 Ill. 201, at page 212, Mr. Justice Scott, speaking for the court, said:

"As long as the drainage results in carrying the water along the natural course the servient proprietor may not complain, even though natural barriers on the higher land have been cut down and the flow of water both accelerated and increased. Were the rule otherwise there would be no method by which any one owner could improve his land by the construction of ditches and drains which would carry the drainage upon another's property, because the

> purpose of such improvements in every instance is to hasten and increase the flow of water, and this object is only attained by the removal of natural barriers."

At this point we suggest that complainant is in no position to object to the application of the rule which its court has adopted for the determination of disputes between its citizens, and in addition, for the determination of disputes which may arise between its citizens and municipalities and the citizens and municipalities of a foreign state. In the case of Kansas v. Colorado, supra, this court, in considering a controversy between the states of Kansas and Colorado relative to the use of the waters of the Arkansas river for reclamation purposes, applied the rule of law which had been adopted by the supreme court of the complaining state. We submit that the same course might properly be followed in the case at bar.

(c) *Minnesota rule*—The common law as to surface water is in force in Minnesota, except that it is modified to the extent that one must so use his own as not to unnecessarily or unreasonably injure his neighbor. Under this rule it is the duty of an owner draining his land to deposit surface water in some natural drain if one is reasonably accessible, and he is entitled to deposit the same in such natural drain though it is thereby conveyed upon the land of his neighbor, if he does not thereby unreasonably injure him. A circum-

stance which the Minnesota court considers in determining what is a reasonable use of one's own land under this rule is the amount of benefit to his land as compared with the amount of injury to his neighbor's land by reason of casting the burden of the surface water upon it. Sheehan v. Flynn, 59 Minn. 436; Gilfillan v. Schmidt, 64 Minn. 29; Hartle v. Neighbauer, 142 Minn. 438.

It cannot be successfully contended that Minnesota has violated its own rule in draining surface water by means of its system of ditches, although the lands of North Dakota are subject to injury as claimed. This system drains thousands of acres of Minnesota lands, directly benefiting approximately one hundred square miles and indirectly benefiting approximately seven hundred fifty square miles. The injury to North Dakota is limited to scattered pieces of land situated within an area of approximately ten square miles, and will be visited upon those pieces of land, according to the testimony of complainant's own witnesses, not every year, but only during such years as floods occur. Just how often floods will occur is left wholly in the realm of doubt. All this, taken in connection with the fact that these lands were periodically subject to overflow for some thirty years prior to the construction of any ditches, to the same extent as they were in 1915 and 1916 after the construction of ditches, leads to but one conclusion, namely, that Minnesota has made a reasonable use of its own lands and has not in-

flicted an unreasonable or unnecessary injury upon the lands of North Dakota.

(d) *Rule contended for by complainant*—It may be that surface water being drained through defendant's ditches loses its character as surface water upon entering Lake Traverse. But this does not alter the situation. The rule of law, with respect to the rights and obligations of owners of lands along a natural water course, where one thereof drains surface water by means of artificial ditches into such natural water course, may be as stated in complainant's brief, to-wit:

> "The owner of land has the right to collect the surface water and the natural drainage of his land into ditches, drains, or artificial streams and discharge it into a natural water course on his own land, which is the natural outlet of the waters so collected, and is not liable to lower proprietors, although, by this arrangement, the flow of the water is accelerated and increased, provided the discharge is not beyond the natural capacity of the water course."

Complainant is in no position to claim that Minnesota, by draining surface water into Lake Traverse through its system of ditches, causes the natural capacity of that lake and its outlet, the Bois de Sioux, to be exceeded. To say that the natural capacity of this water course is exceeded, it must be said that the capacity is exceeded under normal conditions. No such claim was made by complain-

ant's expert witness, Dean Shenehon. He did not say that the operation of this system of ditches results in an overflow of the Bois de Sioux under normal conditions. The most that he claimed was that the ditches operate to raise the mesne level of the lake so that, during a period of excessive precipitation and run-off, a greater flood is visited upon the North Dakota lands in the Bois de Sioux valley than would be were the ditches not in existence. He did not undertake to say how much greater the floods were in 1915 and 1916 than they would have been had the ditches not been in existence; he did not undertake to say how much greater the floods will be in the future because of the ditches; and no doubt for the very good reason that no one can determine such matters. Floods occurred periodically in the Bois de Sioux valley in the past with no ditches. They will no doubt occur there periodically in the future with ditches, as they did in 1915 and 1916. Whether they will occur with greater or less regularity will depend upon rainfall and run-off. These factors caused the floods in the past and will cause them in the future. We submit that the facts in this case do not support the claim that the ditches have caused or will cause a discharge of water into Lake Traverse beyond the natural capacity thereof, and the rule relied upon by complainant, therefore, has no application.

If the contention of complainant to the effect that one is precluded from draining surface water into a natural water course, because of the fact

that by so doing the mesne elevation of that water course is raised slightly, so that in case of a flood a greater flood will be experienced than would be without the ditch, then we submit that drainage construction to a large extent must cease, for it must be conceded that quite frequently when surface water is drained into a natural water course, the mesne elevation of such water course is raised a little, and conditions aggravated to some extent by reason thereof during periods of flood.

CONCLUSION.

Under the settled rule of law, as pointed out in sub-division A of this brief, Minnesota contends that there can be no recovery by the state of North Dakota for the benefit of individual landowners who claim to have been damaged. In short, the letter and spirit of the eleventh amendment to the constitution prohibit this court from entertaining such a suit.

As to the right of equitable relief by injunction, it should be kept in attention that drainage in Minnesota is necessary as is irrigation in Colorado. In the exercise of good husbandry Minnesota certainly has a right to drain surface waters into Lake Traverse. Under the North Dakota rule is may so drain such waters regardless of the damage which will ensue. The extent to which Minnesota by its drainage has raised the mesne level of the waters of that lake

is, according to the testimony of complainant's witnesses, small—not so great as to disclose an improper or inequitable use, the rights of each state being equally considered. The bill should be dismissed.

Respectfully submitted,

CLIFFORD L. HILTON,
Attorney General,
MONTREVILLE J. BROWN and
EGBERT S. OAKLEY,
Assistant Attorneys General
For Minnesota.

JOHN E. PALMER,
Of Counsel.

FILED
NOV 9 1916
JAMES D. MAHER
CLERK

Supreme Court of the United States.

OCTOBER TERM, 1916.

No. 27 ORIGINAL 1917 14 12

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,
Defendant.

Motion for Leave to File.
Brief in Support of Motion.

BY HENRY J. LINDE,
Attorney General.
FRANCIS J. MURPHY,
A. R. BITZING,
Assistant Attorneys General.

M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Solicitors and of Counsel for Complainant.

Review Publishing Company, 225 So. 3rd St., Minneapolis

Supreme Court of the United States.

OCTOBER TERM, 1916.

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,
Defendant.

Now comes the State of North Dakota, complainant in the above entitled matter, by Henry J. Linde, Attorney General of said State, and moves the Court for leave to file the Bill of Complaint herewith exhibited in a controversy which has arisen between the said State of North Dakota and the State of Minnesota growing out of the trespass and other acts alleged in said Bill and that proper process may issue thereon, notifying the defendant of the filing of such Bill and requiring the defendant to appear and defend the same.

HENRY J. LINDE,
Attorney General for the State of North Dakota.

M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Solicitors and of Counsel for Complainant.

Brief in Support of Motion for Leave to File.

The present Bill is exhibited in a suit of equitable nature, invoking the original jurisdiction of this court, brought by the State of North Dakota, as Complainant, against the State of Minnesota, as Defendant.

The gravamen of the charge alleged by the Bill is the commission of a trespass by the defendant state on the domain of complainant under circumstances that have already been productive of irreparable damage and under conditions which, if continued, will result in a continuing trespass and invasion with consequent loss of a character not susceptible of adequate reparation by any pecuniary recovery.

Briefly summarized, the allegations of the Bill disclose that the State of Minnesota, for the purpose of draining and reclaiming large areas within that state, has, by general legislation and by specific appropriations for the purpose, authorized and constructed a system of state ditches and canals that have diverted and accelerated the discharge of the waters accumulating in the interior of that state into a water course constituting the boundary line between Minnesota and North Dakota, greatly in excess of the capacity of that water course to carry off and discharge.

The result, as disclosed by the Bill, has been the overflow and inundation of thousands of acres of valuable agricultural land within the domain of the complainant state, with the consequent destruction of that land for the ordinary purposes of husbandry.

The physical conditions are disclosed to be such that if the artificial system of canals and ditches constructed by Minnesota are maintained, periodic inundation of the area in question in North Dakota will be inevitable and the loss occasioned thereby, permanent. The losses already incurred are shown to be approximately one million dollars and this figure represents a relatively small proportion of the damage which will inevitably be sustained from a perpetuation of the conditions complained of.

The diversion of the waters by means of the artificial system complained of is alleged to have wholly over-taxed the capacity of the natural boundary water course between the states; to have drained into that water course non-tributory and vastly increased volumes of water and to have greatly accelerated the time of flowage in which the portion of the waters ordinarily finding their outlet therein, reach the said boundary channel.

In addition to the loss incident to the overflowage of the area indicated, the Bill discloses

that the inundation and inability of the natural boundary channel to provide for the discharge of the artificially added burden, results in creating a vast reservoir of stagnant water within the area of complainant state, constituting a menace to the health of its citizens in the area affected and those residing in the vicinity thereof and therefore constituting a nuisance within the meaning of the law.

By reference to the Preamble of the General Law of Minnesota (recited in full in the Bill), under the authority of which the principal of the artificial channels was constructed, it will appear that as a result of certain preliminary construction of similar character and similarly authorized within that state, a large area therein had suffered inundation, practically destroying it for agricultural purposes and resulting, as recited in such Preamble, in creating a nuisance and menace to the health of residents in the region affected.

As also recited in that Preamble with a view to obviating the unfortunate conditions indicated, it was necessary to transfer the burden. The law itself accordingly authorized extending the artificial construction to the boundary water course between the states. The result was, as already indicated, that the area thus affected within Minnesota was relieved by casting the accumulated waters

thereof, practically in a body, on to the domain of the complainant state.

Without further discussion of the details fully disclosed by the allegations of the Bill, the resulting situation may be summarized in the statement that Minnesota has effected its own relief by invasion and trespass on the area of complainant.

The lands affected within the area of North Dakota are alleged to have been occupied and improved for the ordinary purposes of agriculture and husbandry for many years and to have been amongst the most valuable for that purpose of any lands within that State. It is further shown that they were devoted to the use last indicated at the time of the trespass complained of. Following the trespass, it is disclosed that the lands have been rendered practically useless as a result thereof and that this condition will be perpetuated unless the defendant be restrained and enjoined from maintaining and continuing the artificial conditions responsible therefor.

The complainant state has therefore exhibited its Bill in this original proceeding, seeking appropriate equitable relief, enjoining the continuance of the trespass and for the recovery of the damages resulting therefrom.

As the matters alleged present a controversy between two sovereign states, the proceed-

ing falls within the original jurisdiction of this court as provided by the second section of Article Third of the Constitution and the original Judiciary Act of 1789, carried forward as Section 687 of the United States Revised Statutes.

The propriety of the present form of proceeding is clearly indicated in the following recent decisions of this court.

Missouri v. Illinois, 180 U. S. 208.

Kansas v. Colorado, 185 U. S. 125.

Georgia v. Tennessee Copper Co., 206 U. S. 230.

In the *Kansas-Colorado case*, *supra*, the doctrine was clearly enunciated that with respect to invasions of the domain of a state resulting in loss to its citizens, the state itself was the proper party to seek redress, occupying as it did, the position of *parens patriae*, etc., of all or a considerable portion of its citizens whose interests were affected.

In *Georgia v. Tennessee*, *supra*, the resulting situation was clearly summarized in the following language:

> "This is a suit by a state for an injury to it in its capacity of *quasi-sovereignty*. In that capacity the state has an interest *independent of and behind the titles of its citizens in all the earth and air within its domain.* * * * When the states by their union made the forceable abatement of

> outside nuisances impossible to each, they did not thereby agree to submit to whatever might be done. They did not renounce the possibility of making reasonable demands on the ground of their still remaining *quasi-sovereign* interests, *and the alternative to force is a suit in this court.*" (Italics ours).

In presenting this brief outline, we have not deemed it either necessary or appropriate to enter upon any extended discussion of the legal questions going to the merits of the controversy as these will be more appropriately for consideration at a later stage of the proceedings when the defendant shall have entered its appearance herein.

In accordance with the rule stated in *Georgia v. Grant*, 6 Wall. 241, the motion for leave to file is presented *ex parte*.

It is respectfully submitted on behalf of the complainant the motion should be granted and the defendant required to appear and defend.

Respectfully submitted,

HENRY J. LINDE,
Attorney General of the
State of North Dakota.

M. H. BOUTELLE.
JOHN LIND,
I. C. PINKNEY,
Solicitors and of Counsel
for Complainant.

Office Supreme Court, U.
FILED
OCT 23 1922
WM. R. STANSBU
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Supreme Court of the United States.

OCTOBER TERM, 1921.

No. 10, ORIGINAL.

10

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,

MOTION FOR LEAVE TO OPEN, FILE AND PRINT RECORD OF ADDITIONAL TESTIMONY AND ASSIGN DATE FOR ARGUMENT.

SVEINBJORN JOHNSON, *Attorney General,*
Solicitor for the State of North Dakota.
M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Of Counsel.

Supreme Court of the United States.

OCTOBER TERM, 1921.

No. 12, ORIGINAL.

THE STATE OF NORTH DAKOTA,

Complainant,

vs.

THE STATE OF MINNESOTA,

LEAVE TO FILE.

Now comes the State of North Dakota, the complainant herein and respectfully requests this Honorable Court for leave to file the record of the additional testimony taken herein under the previous order of this Court and the Motion herein to open up said record and print the same as presented in said Motion.

SVEINBJORN JOHNSON, *Attorney General,*
Solicitor for the State of North Dakota.
M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Of Counsel.

SUPREME COURT OF THE UNITED STATES
OCTOBER TERM, 1921.
No. 12, ORIGINAL.

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,

NOTICE OF MOTION.

To the State of Minnesota:

You will please take notice that Complainant herein, The State of North Dakota, by its counsel, will move the Court on Monday, the 23rd day of October, 1922, to file, open up and print the record of the additional testimony taken in the above entitled proceeding in accordance with the previous orders and directions of the Court in the manner and form set forth in the Motion hereto attached.

SVEINBJORN JOHNSON, *Attorney General,*
Solicitor for the State of North Dakota.

M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Of Counsel.

SUPREME COURT OF THE UNITED STATES
OCTOBER TERM, 1921.
No. 12, ORIGINAL.

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,

MOTION.

Now comes the Complainant, The State of North Dakota, by its counsel, and moves the Court as follows:

1. That the record of the additional testimony taken herein pursuant to the Court's Order of April 18th, 1921 and heretofore returned by the Commissioner appointed to take such testimony, be filed and the testimony opened.

2. That the record of such testimony, including the Exhibits, be printed as provided by the rules of this Court under the directions of the clerk.

3. That the Court, by its Order, fix the time within which the parties shall file their respective briefs and assign a date on which said cause will be heard by the Court on oral argument.

This Motion is based upon all the proceedings had in this cause; upon the stipulation of the parties filed herein, a copy of which is hereto attached, and upon the statement of counsel appended hereto.

SVEINBJORN JOHNSON, *Attorney General,*
Solicitor for the State of North Dakota.

M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Of Counsel.

SUPREME COURT OF THE UNITED STATES
OCTOBER TERM, 1919.
No. 17, ORIGINAL.

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,

COPY OF STIPULATION.

It is hereby stipulated by and between the parties to the above entitled cause, by their respective solicitors as follows:

First: The further evidence directed by the Court's Order of April 18th, 1921, in this cause, shall be taken before the Hon. W. B. Douglass, the Commissioner heretofore appointed as such by the Court in this cause.

Second: The taking of such evidence shall commence on May 8th, 1922, at the Capitol Building in St. Paul, Minnesota and shall proceed on that and such succeeding dates as the Commissioner shall appoint for that purpose or as the parties may agree with the Commissioner's approval, until such evidence is completed.

Third: The evidence of the complaint shall be first taken, followed by that of the State of Minnesota and the complainant may then offer its rebuttal, if any.

Fourth: On completion of the evidence so taken, the same shall be certified to the Court by the Commissioner in accordance with the rules and the orders and directions of the Court heretofore made in this cause in that behalf.

Fifth: That briefs shall be filed by each of the parties so that said cause may be assigned for final hearing at the earliest date which the Court may fix for such hearing after the opening of the October, 1922 term.

Dated March 27th, 1922.

THE STATE OF NORTH DAKOTA,
By SVEINBJORN JOHNSON,
Attorney General.

THE STATE OF MINNESOTA,
By CLIFFORD L. HILTON,
Attorney General.

STATEMENT.

The record of the previous proceedings in this matter will disclose substantially as follows:

The cause had its inception in an original Bill filed by leave of this Court by The State of North Dakota, as Complainant, against The State of Minnesota. The Bill charged the commission of a trespass by The State of Minnesota on the domain of complainant State. Relief was sought by way of a permanent injunction restraining the further commission of such trespass with damages for the resultant injury.

After issue joined by the answer filed on behalf of The State of Minnesota, an order was made by the Court designating a Commissioner before whom the testimony of the respective parties should be taken. In due course such testimony was returned and filed in this Court.

The cause was assigned for hearing on January 3rd, 1921, and the oral arguments concluded on January 5th, following, at which time the matter was finally submitted.

On April 18th, 1921, the Court entered its Order, the import whereof will sufficiently appear from the following excerpt, viz:

> "To afford an opportunity for the taking of supplemental proof deemed by the court necessary to an adequate consideration and disposition of the cause, it is ordered that the case be restored to the docket to the end that the parties may proceed promptly to take the testimony of not exceeding three engineering experts on each side as to the possibility, within the limits of a reasonable expenditure, of doing away with or ameliorating the flood

conditions along the Bois de Sioux River by means other than the injunction prayed for in the bill herein."

Further provisions of the Order directed attention to certain specific matters to which this testimony should be addressed and with respect to which the Court desired further information.

This supplemental testimony has now been taken before the Commissioner and certified and returned by the latter to this Court.

The Complainant views the issue raised by the supplemental testimony as one of comparitively narrow import. The parties have agreed, as will appear from the accompanying stipulation that the cause shall have a relatively early assignment for final hearing. It is probably unnecessary to call the attention of the Court to the time which has already elapsed, since the cause was instituted and the desire, in consequence, that its final disposition should be expedited.

The record of the supplementary testimony is relatively brief and no reason suggests itself why ample time will not be afforded for the filing of briefs on both sides so that the case, subject to the approval of the Court, may be assigned for final hearing at an early date.

Respectfully submitted,

SVEINBJORN JOHNSON, *Attorney General,*
Solicitor for the State of North Dakota.

M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Of Counsel.

FILED
DEC 6 1909
JAMES D. MAHER,
CLERK

Supreme Court of the United States.

OCTOBER TERM, 1910

Original Action No. [redacted]

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,
Defendant.

PETITION ON BEHALF OF COMPLAINANT ON A MOTION FOR LEAVE TO FILE AND FOR DIVISION OF EXPENSE OF PRINTING RECORD.

WILLIAM LANGER,
Attorney General,
HARRISON A. BRONSON,
Assistant Attorney General,
Solicitors for the State of North Dakota.

JOHN LIND,
M. H. BOUTELLE,
I. C. PINKNEY,
Of Counsel.

Review Publishing Company, 332 So. 3rd St., Minneapolis.

Supreme Court of the United States.

Original Action.
No. 27.

THE STATE OF NORTH DAKOTA,

Complainant.

vs.

THE STATE OF MINNESOTA,

Defendant

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Supreme Court of the United States.

Original Action.

No. 27.

THE STATE OF NORTH DAKOTA,

Complainant,

vs.

THE STATE OF MINNESOTA,

Defendant.

Now comes the State of North Dakota, the complainant herein, and herewith respectfully requests your Honorable Court for leave to file the record herein and the motion herein to open up said record and print the same, as presented in said motion.

WILLIAM LANGER,
Attorney General,
HARRISON A. BRONSON,
Assistant Attorney General,
Solicitors for the State of North Dakota.

JOHN LIND,
M. H. BOUTELLE,
I. C. PINKNEY,
Of Counsel.

IN THE SUPREME COURT OF THE UNITED STATES.

Original Action.
No. 27.

THE STATE OF NORTH DAKOTA,
Complainant,

vs.

THE STATE OF MINNESOTA,
Defendant

NOTICE OF MOTION.

TO THE STATE OF MINNESOTA:

You will please take notice that complainant herein, The State of North Dakota, by its solicitors will move the Court on Monday the 16th day of December, 1918, to file, open up and print the record in the above entitled action in the manner and form set forth in the Motion hereto attached.

WILLIAM LANGER,
Attorney General,
HARRISON A. BRONSON,
Assistant Attorney General,
Solicitors for the State of North Dakota.

JOHN LIND,
M. H. BOUTELLE,
I. C. PINKNEY,
Of Counsel.

IN THE SUPREME COURT OF THE UNITED STATES.

Original Action.

No. 27.

THE STATE OF NORTH DAKOTA,

Complainant.

vs.

THE STATE OF MINNESOTA,

Defendant

MOTION.

Now comes the complainant, the State of North Dakota, in the above entitled cause by its solicitors, and herewith moves the Court as follows:

1. That the record herein be filed and the testimony be opened.

2. That the testimony and Exhibits in such record, excluding certain of the Exhibits hereinafter mentioned, be printed under the direction of the clerk of this Court and under the rules of this Court.

3. That the Exhibits set forth in the Stipulation, a copy of which is hereto attached, marked Exhibit 1, and referred to in such stipulation as Statement "A", be printed under the direction of the clerk and under the rules of this Court.

4. That the Exhibits set forth in said Stipulation, and referred to as Statement "B" be considered part of the record herein for purposes of reference only, in accordance with the terms of said Stipulation.

5. That Defendant's Exhibit 116, a map, be combined with defendant's Exhibit 7, a map, for purposes of reproduc-

tion and printing, under the rules of this Court, in accordance with the terms of said Stipulation.

6. That all state laws and records of legislative proceedings returned with the record herein and not transcribed into the testimony be considered part of the record for purposes of reference only and be not printed, pursuant to said Stipulation.

7. That the cost of printing the record herein be by order of this Court divided between the State of North Dakota and the State of Minnesota an that each be required to pay to the clerk of this Court its proportion of the record herein produced or made by it, the same to be determined by the clerk of this Court.

This motion is based upon all the proceedings had in this cause, and upon the statement and argument hereto attached.

WILLIAM LANGER,
Attorney General,
HARRISON A. BRONSON,
Assistant Attorney General,
Solicitors for the State of North Dakota.

JOHN LIND,
M. H. BOUTELLE,
I. C. PINKNEY,
Of Counsel.

EXHIBIT 1.

SUPREME COURT OF THE UNITED STATES.

(Original Action No. 27.)

THE STATE OF NORTH DAKOTA,

Complainant,

vs.

THE STATE OF MINNESOTA,

Defendant.

STIPULATION RESPECTING EXHIBITS.

It is hereby stipulated:

1. That all of the exhibits offered in evidence by the respective parties upon the taking of the testimony herein before the Honorable Wallace B. Douglas, Commissioner, which are numbered and described in "Statement A" hereto annexed, are a part of the record herein and may be reproduced and become a part of the printed record herein as prepared by the Clerk under the rules and directions of the Court.

2. That all of the exhibits so offered in evidence before said Commissioner, which are numbered and described in "Statement B" hereto annexed, are a part of the record herein and shall as such accompany and be a part of the return to this Court by said Commissioner, but need not be reproduced as a part of the printed record, but shall nevertheless be referred to by the par-

ties, and considered by the Court as in all things a part of the record herein.

3. That defendant's Exhibit 116, map showing different classes of state lands, may, for the purpose of reproduction and printing by the Clerk, be combined with defendant's Exhibit 7, and not printed as a separate exhibit.

4. That all state laws and legislative proceedings or records, offered in evidence and not already transcribed into the testimony, are a part of the record and shall accompany and form a part of the return by said Commissioner to this Court, but need not be reproduced in the printed record; but shall nevertheless be referred to by the parties and considered by the Court, as in all things a part of the record herein.

5. That the record herein, consisting of eight separate volumes of typewritten matter, the pages numbered from 1 to 3426 inclusive, together with the exhibits therein and in this stipulation mentioned and described, including the proceedings, motions and objections in such record, is all of the testimony and proceedings taken and had before the Commissioner; that said Commissioner may certify the same to this Court as the complete record herein.

6. That in entering into this stipulation complainant does not waive the right to make such motion as it may be advised respecting the expense of printing and reproducing of the record; but this stipulation shall not be construed as in any manner a consent or agreement on the part of the defendant to pay any of the expense of printing the record or reproducing any of the exhibits; nor as an agreement on the part of the complainant

so to pay, except as the rules or orders of this Court may provide.

Dated July 30th, 1918.

WILLIAM LANGER,
Attorney General,
of North Dakota,
HARRISON A. BRONSON,
Assistant Attorney General of
North Dakota.
M. H. BOUTELLE,
JOHN LIND,
I. C. PINKNEY,
Attorneys for Complainant.
CLIFFORD C. HILTON,
Attorney General of
Minnesota.
JOHN E. PALMER,
Assistant Attorney General of
Minnesota.
Attorneys for Defendant.

EXHIBIT 1.

STATEMENT "A"

COMPLAINANT'S EXHIBITS

Ex 1 Map (Same as attached to bill)

Ex 5 Map Drainage channels

Ex 6 Cross section Bois de Sioux

Ex 35 County Auditor Richland County Assessment flooded lands

Ex 36 " " " " " " "

Ex 37 " " " " " " "

Ex 38 " " " " " " "

(35 to 38 inc.) are already in record in full)

Ex 49 Cross Section R R Bridge and portion of cut off.

DEFENDANT'S EXHIBITS

Ex 1 Mandamus proceedings

Ex 2 Map and Plan 2nd Mus. State Ditch (includes Ex 2a)

Ex 5 Report of Legislative committee

Ex 6 Large Contour Map Drainage area

Ex 7 Map County and Judicial Districts

Ex 28 Map outlet area Lake Traverse

Ex 43 Cross Sections

Ex 44 " "

Ex 72 Precipation records

Ex 73 Map Mustinka flood plane.

Ex 75 Map Lake Traverse and Bois de Sioux drainage area

Ex 76 Precipation chart Red Riv. drainage area

Ex 77 " " Lake Trayerse Drainage area

Ex 29 Profile White Rock Road

Ex 31 " Bois De Sioux channel

Ex 42 " Map Mustinka

Ex 4 Drainage Map Confluence Mustinka Riveer and Ten Mile Creek

Ex 111 Map of County ditches Richland County.

EXHIBIT 1.

STATEMENT "B"

COMPLAINANT'S EXHIBITS.

Ex 2	Photograph
Ex 3	Photograph
Ex 4	Herman Quadrangle
Ex 7	Chapter 138 General Laws Minnesota 1911
Ex 8	Chapter 377 " " " 1915
Ex 9	Photograph
Ex 10	"
Ex 11	"
Ex 12	"
Ex 13	Profile, highway across Bois de Sioux and White Rock
Ex 14	Rainfall chart
Ex 15	" "
Ex 16	Map weather bureau statements
Ex 17	Photograph
Ex 18	"
Ex 19	"
Ex 20	"
Ex 21	"
Ex 22	"
Ex 23	Map, Redpath Township
Ex 24	Map, Clifton Twp.
Ex 25	Map, Tintah Twp.
Ex 26	Photograph
Ex 27	"
Ex 28	"
Ex 29	"
Ex 30	"
Ex 31	"
Ex 32	"

Ex 33 "
Ex 34 "
Ex 39 "
Ex 40 "
Ex 41 "
Ex 42 "
Ex 43 "
Ex 44 "
Ex 45 "
Ex 46 "
Ex 47 "
Ex 48 "

STATEMENT "B"

DEFENDANT'S EXHIBITS.

Ex 3 Wendell Quadrangle
Ex 8 Ashby "
Ex 9 Barrett "
Ex 10 Chokio "
Ex 11 Morris "
Ex 12 Photograph
Ex 13 "
Ex 14 "
Ex 15 "
Ex 16 "
Ex 17 "
Ex 18 "
Ex 19 "
Ex 20 "
Ex 21 "
Ex 22 Peever Quadrangle
Ex 23 Beardsley "

Ex 25 Document No. 139 61st Congress
Ex 26 " No. 439 64th "
Ex 27 " No. 199 65th "
Ex 30 Photograph White Rock Road
Ex 32 Government Elevations, Lake Traverse
Ex 33 Photograph
Ex 34 "
Ex 35 "
Ex 36 "
Ex 37 "
Ex 38 "
Ex 39 "
Ex 40 "
Ex 41 "
Ex 45 "
Ex 46 "
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Ex 60 "
Ex 61 "
Ex 62 "

Ex 63 "
Ex 64 "
Ex 65 "
Ex 66 "
Ex 67 "

Ex 68 Photograph
Ex 69 "
Ex 70 "
Ex 71 "
Ex 74 New Effington and White Rock Quadrangle,
Ex 78 Assessment Book, Clifton Twp.
Ex 78a Assessment Book, Redpath Twp.
Ex 78b Assessment Book, Tintah Twp.
Ex 79 Government Book of Geological survey
Ex 80 " " " " "
Ex 81 " " " " "
Ex 82 " " " " "
Ex 83 " " " " "
Ex 84 " " " " "
Ex 85 " " " " "
Ex 86 " " " " "
Ex 87 " " " " "
Ex 88 " " " " "
Ex 89 " " " " "
Ex 90 " " " " "
Ex 91 " " " " "
Ex 92 " " " " "
Ex 93 " " " " "
Ex 94 Gaugings of Mustinka River
Ex 95 Gaugings of Red River
Ex 96 Photograph

Ex 97 "
Ex 98 "
Ex 99 "
Ex 100 "
Ex 101 "
Ex 102 "
Ex 103 "
Ex 104 "
Ex 105 "
Ex 106 " Marked but not offered
Ex 107 Government plat
Ex 108 " "
Ex 109 There is none
Ex 110 Government plat
Ex 112 Plat Government survey Clifton Twp.
Ex 113 " " " Logan Twp.
Ex 114 " " " Gorton Twp.
Ex 115 " " " Redpath Twp.
Ex 116 Map showing various classes of state lands
Ex 117 to 117F Inc. Climatological Data South Dakota
Ex 118 to 118G " " " North Dakota
Ex 120 Stream gaugings Mustinka River
Chapter 221 General Laws of Minnesota 1893
Chapter 164 General Laws of Minnesota 1895
Ex 119 to 119H Inc, Climatological Data Minnesota.